TRENDS IN THE ALLOCATION OF U.S. PREVENTIVE SERVICES TASK FORCE RECOMMENDATION GRADES AND THE DIRECTIONALITY OF TOPIC UPDATES OVER TIME

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ABSTRACT

Garrett Thompson: Trends in the Allocation of U.S. Preventive Services Task Force Recommendation Grades and the Directionality of Topic Updates over Time
(Under the direction of Russell Harris)

Background: The U.S. Preventive Services Task Force has provided evidence-based recommendations to primary care clinicians on the use of preventive services for almost 30 years. In the past, the Task Force has been criticized for being too conservative in issuing recommendations in favor of the use of preventive services. Several recent criticisms, however, have focused on recommendations considered too liberal in the promotion of services.

Objective: To identify trends in the overall allocation of recommendation grades and in the frequency of positive changes (i.e. the issuance of more favorable recommendations) and negative changes (i.e. the issuance of less favorable recommendations) made to recommendations when updating topics.

Methods: All recommendations issued by the Task Force from January 1996 to June 2017 were collected. Point-based and categorization-based methods were used to evaluate the directionality of change for recommendations issued on updated topics.

Results: The proportion of negative recommendations issued over the past several years has substantially decreased (to 10.1% of recommendations issued from 2013 to 2017 compared to 22.4% from 2006 to 2012 and 23.8% from 2001 to 2005), while the proportion of "I" statements has increased (to 46.1% from 2013 to 2017 compared to 33.7% from 2006 to 2012 and 36.6% from 2001 to 2005). The proportion of recommendations assigned positive letter grades has slightly increased over time (to 38.2% of recommendations issued from 2013 to 2017 compared to 36.7% from 2006 to 2012 and 33.7% from 2001 to 2005). Furthermore, negative changes (resulting in the decreased promotion and/or increased discouragement of preventive services)

made to recommendations issued on updated topics have become less common over time (as assessed by two different methods). Conversely, positive changes (resulting in the increased promotion and/or decreased discouragement of preventive services) have become more common over the past several years. Finally, the Task Force has increasingly chosen not to update negative recommendations for previously evaluated interventions or populations (6 out of 8 of these dropped negative recommendations have occurred since 2013).

C**onclusions:** Several potential factors may have contributed to the longitudinal changes in the issuance of Task Force recommendations observed in this study. These factors include changes in evidence for evaluated services, changes in the methodology for assigning recommendations, political pressures, the link between coverage policy and recommendations, and changes in the thresholds used to delineate recommendation grades. Further research is needed to assess the extent to which each of these factors has influenced the overall issuance of recommendations.

TABLE OF CONTENTS

INTRODUCTION

The U.S. Preventive Services Task Force (USPSTF) is an independent panel of experts in primary care and prevention that develops recommendations for clinical preventive services based on systematic reviews of evidence related to their effectiveness. First convened in 1984, the Task Force has provided guidance to clinicians on the use of preventive services for nearly 30 years since it published the first edition *Guide to Clinical Preventive Services* in 1989 (hereafter referred to as the *Guide*).[1] Today, the mission of the Task Force remains unchanged: "to improve the health of all Americans by making evidence-based recommendations about clinical preventive services and health promotion."[2] Its recommendations cover a wide range of preventive services offered in the primary care setting or referable by a primary care clinician such as screenings, counseling services, and preventive medications. Evidence reviews form the scientific basis for assessing the certainty and magnitude of benefits and harms associated with the routine provision of a preventive service in a particular population. Depending on the certainty of evidence regarding this balance for a service, the Task Force may issue a recommendation for or against its use. In other instances, the Task Force may deem that the existing evidence base is not sufficient to make a recommendation.

The Task Force, thus, has a tripartite set of responsibilities in providing guidance to primary care clinicians about which preventive services to routinely offer their patients. First, it has the responsibility of making recommendations in favor of routinely offering services likely to yield net health benefit. Secondly, it has the responsibility of making recommendations against the routine provision of services from which patients are unlikely to benefit or may even be harmed. Finally, when the cumulative evidence related to a preventive service is insufficient to evaluate its balance of harm and benefits with certainty, the Task Force has the responsibility

of stating as such. In these cases, a summary of what is known about the service is important for informing clinical practice and for guiding future research efforts.

The current system of assigning grades to specific recommendations addresses these responsibilities. For each recommendation, the Task Force evaluates both the certainty and strength of evidence for or against the intervention.[3,4] To evaluate the magnitude of net benefit, the Task Force considers both the magnitude of benefit and the magnitude of harm that would result from implementing the preventive service in a primary care population or subpopulation. While metrics such as the "number needed to treat" or "number needed to harm" may be considered in this estimation, the Task Force does not use specific criteria to differentiate between levels of net benefit.[4] Specific criteria, however, are used to evaluate the certainty that the assessment of the magnitude of net benefit is correct.

A recommendation grid guides the selection of the appropriate grade for a given recommendation based on both the certainty and magnitude of net benefit (Table 1). Standardized language accompanies each grade.[5] For both "A" and "B" recommendations, the Task Force recommends that clinicians offer or provide the service. For "C" recommendations, the Task Force recommends that clinicians offer or provide the service to selected patients based on professional judgment and patient preferences. For "D" recommendations, the Task Force discourages the use of the service. Finally, for services where the certainty of the magnitude of net benefit is low, the Task Force issues an "I" statement and recommends that if the service is offered, patients be informed about the uncertainty regarding its balance of benefits and harms.

Table 1. U.S. Preventive Service Task Force Recommendation Grid[4]

Certainty of Net Benefit	Magnitude of Net Benefit			
	Substantial	Moderate	Small	Zero/Negative
High	A	B	C	D
Moderate	B	B	C	D
Low	I			

Historically, the Task Force has been criticized for a perception that its evidence threshold is too high for issuing recommendations in favor of the routine use of services.[6] Recently, however, the Task Force has faced a different criticism for not being strict enough in issuing positive recommendations. One critic has argued that several recommendations issued over the past few years have been "far more liberal in promoting interventions."[7]

In late 2016, for instance, the Task Force updated its recommendations for depression screening in adults, adolescents, and children.[8,9] Previously, the Task Force had issued "B" recommendations for routinely screening adults and adolescents (ages 12 to 18) for depression when support systems are in place to ensure accurate diagnosis, effective treatment, and follow-up.[10,11] Despite concern from critics who argued that these recommendations should be reconsidered, in part, because no randomized controlled trials have directly demonstrated that depression screening benefits primary care patients[12], the USPSTF reaffirmed them. Furthermore, the Task Force expanded its recommendations in favor of depression screening in adults to include pregnant and post-partum women and omitted its "C" recommendations for the selective screening of patients when depression care supports are not in place. These updated recommendations have received similar criticisms, including charges that the Task Force did not adequately consider the harms associated with screening and that it relied too heavily on indirect evidence to evaluate the benefits of screening.[13]

Similarly, other USPSTF recommendations issued within the past few years have been

criticized for expanding the endorsement of preventive services on the basis of evidence deemed inadequate to estimate the magnitude of benefit with sufficient certainty. In 2013, for instance, the "B" recommendation for low-dose CT screening in high-risk current and former smokers generated significant dissent.[14] This recommendation represented a new endorsement of this service in comparison to the "I" statement the Task Force had previously issued for all asymptomatic patients.[14] Among the criticisms lodged against the recommendation included an assertion that its reliance on a single study and simulation models introduced significant uncertainty in the overall estimate of the magnitude net benefit.[15] Furthermore, critics argued that because of the significant harms associated with low-dose CT screening, even small differences in screening conditions outside a trial setting could alter the fine balance between harms and benefits in an unfavorable direction.[15]

The 2016 recommendation statement on statins for the prevention of cardiovascular disease in adults has also faced criticism.[16] These updated recommendations included a "B" recommendation for the initiation of statins in a set of high-risk adults, expanding upon the prior recommendations in favor of screening for lipid disorders in adults at increased risk of coronary heart disease.[17] Detractors of the updated recommendations argue that the lack of access to primary data from statin clinical trials may have led to an overestimation of the benefits of statin use.[18] Furthermore, they argue that the evidence regarding the harms from statins is incomplete, particularly because many of the trials included in the USPSTF evidence review did not report on common statin side effects such as muscle pains and weakness.[18] They additionally contend that potential harms associated with statin use in healthy persons, such as those related to the increased caloric and fat intake among statin users over time[19], did not receive sufficient consideration.

While substantial attention has been drawn to updated recommendations made in favor of the routine provision of preventive services, growing concern has also been directed toward the overuse of services associated with net harm. Based on a call for U.S. medical specialty societies to identify the top overused tests and treatments with little meaningful benefit or potential net harm[20], the Choosing Wisely campaign had been at the forefront of an international discussion about the overuse of medical services.[21] Since 2012, over 70 medical specialty societies have created lists of the top medical services in their specialty for which there is strong evidence of overuse and significant potential for harm.[22]

Despite the widespread publicity the Choosing Wisely campaign has brought to the concept of medical overuse, the recommendations included on these lists are not necessarily based on rigorous evidence assessments. One study, for instance, concluded that a majority of primary care–relevant Choosing Wisely recommendations are based on expert consensus or disease-oriented evidence.[23] Admittedly, the Choosing Wisely campaign notes that these recommendations are intended "to spur conversation about what is appropriate and necessary treatment" and should not be used to establish coverage decisions.[24] Thus, there is a need for the development of evidence-based recommendations against the use medical services shown to have no benefit or cause significant harm. For preventive services, the USPSTF addresses this need by assigning a "D" grade to services evaluated, with at least moderate certainty, to have zero or negative net benefit.[5]

In 2012, the USPSTF issued perhaps its most publicized "D" recommendation when it expanded its recommendation against the use of PSA-based screening for prostate cancer to include men of all ages.[25] An editorial published alongside the USPSTF recommendation statement vehemently critiqued the recommendation arguing that the Task Force had

underestimated the benefits and overestimated the harms of prostate cancer screening.[26] The debate surrounding the recommendation even entered the political realm when former Senator Jeff Sessions (R-AL) introduced S.Res. 251 to the Senate in 2013.[27] The resolution contended that the USPSTF "should reevaluate its recommendation against PSA-based screening for prostate cancer men in all age groups … and seriously engage with specialists, including urologists and oncologists, as it reevaluates its recommendation."[27] Although the resolution did not make it out of committee, its introduction to the Senate highlights the considerable controversy this recommendation generated among both the medical community and the general public.

The recently issued draft recommendation statement for prostate cancer screening rescinds the "D" recommendation against PSA-based screening in men ages 55 to 69 years old.[28] Instead, the Task Force has proposed a "C" recommendation advocating that clinicians inform these men about the benefits and harms of screening, including a small potential mortality benefit and potential harms such as false-positive results, overdiagnosis and overtreatment, and treatment complications. This change, coupled with several other recent recommendation changes, including those discussed above, adds credence to the supposition that Task Force recommendations over the past several years have tended to move in a direction toward promoting the increased use of preventive services and away from discouraging the use of services.

This potential trend, however, has not been formally assessed. In this report, I aim to evaluate the hypothesis that USPSTF recommendations have trended toward promoting the increased use of preventive services and away from discouraging the use of preventive services, particularly over the past several years. Two primary questions are addressed. First, how has the

overall allocation of recommendation grades changed over time? Second, have updated recommendations for previously evaluated topics trended in a particular direction? More specifically, how frequently has the directionality of change been in a positive direction, either recommending in favor of the use of more preventive services or recommending against the use of fewer services? Correspondingly, how frequently has the directionality of change been in a negative direction, either recommending in favor of the use of fewer preventive services or recommending against the use of more services?

Table 2. Definitions for key terms used throughout paper

Term	Definition
Topic	An evaluated preventive service or set of preventive services evaluated together, usually for a single condition or disease. Evaluated preventive services may include screening tests, counseling services, preventive medications, or a combination of services.
Recommendation statement	Structured statement covering a preventive services topic and including one or more individual recommendations with associated letter grades. In addition to recommendations, recommendation statements include the rationale for each recommendation, guidance for clinicians who want to use the recommendations, and a discussion of the evidence.
Individual Recommendation	Single recommendation regarding the use of a preventive service in a specific population with an associated letter grade.
Letter grade	Grade assigned to each individual recommendation. Indicates the strength of the recommendation for or against the routine use of the preventive service. Each letter grade (A, B, C, D, I) has a standard definition and suggestions for practice (see Table 3).
Updated topic / topic update	Updated set of recommendations for a previously evaluated topic (or topics if the services were previously evaluated separately).
New topic	Preventive service or set of preventive services evaluated by the Task Force for the first time.
Inactive topic	Topic the Task Force has chosen not to update. Topics may be inactivated if they are no longer relevant to clinical practice, as a result of changes in technology, or for other reasons.
Referred topic	Topic previously evaluated by the Task Force, but since referred to another organization. The Task Force, for instance, now refers to the Advisory Committee on Immunization Practices for recommendations on immunizations.

Table 3. Current letter grades, definitions, and suggestions for practice.[29]

Grade	Definition	Suggestions for practice
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.	Offer or provide this service.
B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.	Offer or provide this service.
C	The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.	Offer or provide this service for selected patients depending on individual circumstances.
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.	Discourage the use of this service.
I statement	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.	Read the clinical considerations section of USPSTF Recommendation Statement. If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.

METHODS

Collection of current and historical USPSTF recommendation statements

On its official website, the USPSTF lists the set of preventive services topics for which it has published specific recommendations.[30] For each topic, the USPSTF website provides hyperlinks to the most recently published recommendation statement and to additional supporting documents such as the final research plan, the final evidence review, an evidence summary, and a one-page clinical summary. Using these hyperlinks, I obtained the most recently published recommendation statement for each listed topic. I last consulted the USPSTF website on June 1, 2017.

While the USPSTF website archives older versions of recommendation statements for many topics, not all historical recommendation statements are referenced or available for download. For this reason, I used the most recently issued recommendation statement for each topic to identify the previously issued recommendation statement (or statements) on the same topic. In most cases, the abstract of the recommendation statement referenced the year in which the previous recommendation statement had been issued. For recommendation statements published in 2010 and later, a specific section within each statement compares the updated recommendations with the previously issued recommendations on the same topic. Using this information, I searched PubMed to identify historical recommendation statements when they were not available on the USPSTF website. In most instances, I was able to retrieve recommendation statements that had been published in peer-reviewed academic journals. In a few cases, however, I could only obtain recommendation statements that had been released directly by the Agency for Healthcare Research and Quality (AHRQ). I collected recommendation statements in reverse chronological order, mapping them back either to

recommendation statements issued on new topics or to recommendations included in the second edition of the *Guide* (published in 1996).[31]

Data extraction

I extracted data from each identified recommendation statement and from the topic chapters and tables of ratings in the second edition of the *Guide*. For each recommendation statement or chapter, I documented its title, its publication date, the status of the recommendation statement (historical or current), a determination of whether the topic had previously been evaluated (updated topic or new topic), and the current topic status (active, inactive, or referred). For each individual recommendation, I extracted the text of the recommendation summary, its associated letter grade, and the targeted population.

Considerations for recommendations included in the second edition of the Guide

Extracting data from recommendations published in the second edition of the *Guide* presented several unique challenges (see Appendix A for full discussion). First, the chapters written for each topic included in the *Guide* do not always clearly outline the individual recommendations and their associated letter grades. For this reason, I used the tables of ratings (included in Appendix A of the second edition of the *Guide*) to delineate the individual recommendations issued on each topic. I referenced the chapter associated with each table to further interpret individual recommendations. Second, several topics included in the second edition of the *Guide* have not been updated by the Task Force (for a list of these topics, see Appendix B, Table B15). I only extracted data for recommendations issued on topics that have since been updated. Third, the methodology for assigning recommendation grades to counseling

interventions has substantially evolved over time. The second edition of the *Guide*, however, provided sufficient information to interpret its recommendations on counseling interventions in the context of the current grading system (see Appendix A). Finally, prior to issuing its first recommendations in 2001, the third Task Force significantly updated the recommendation grading system.[32] These changes included the establishment of the "I" letter grade and an update of the "C" letter grade definition. For "C" recommendations issued in the second edition of the *Guide*, the Task Force concluded that current evidence was insufficient to recommend for or against the routine inclusion of a preventive service in the periodic health exam, but that recommendations for the service could be made on other grounds.[33] Unless the text associated with a "C" recommendation issued in the second edition of the *Guide* clearly indicated otherwise, I interpreted it as a recommendation neither for nor against the routine use of a service when comparing it to updated recommendations.

Summary of active USPSTF recommendations

I tabulated the current number of active topics and individual recommendations listed on the USPSTF website as of June 1, 2017. I then calculated the number and proportion of active recommendations assigned each letter grade. I further calculated the number and proportion of active topics with at least one negative ("D") recommendation, positive ("A" or "B") recommendation, "C" recommendation, or "I" statement. Finally, I compiled a summary of all active recommendations published within the past five years (from June 1, 2012 to June 1, 2017), roughly the set of recommendations eligible for inclusion in the National Guidelines Clearinghouse.[34]

Assessing changes in the allocation of USPSTF recommendation grades over time

I calculated the number and proportion of USPSTF recommendations issued by letter grade for each year from 2001 to 2017. Given the small number of recommendations issued in any single year and the high variability seen between years, I aggregated individual recommendations into three time periods based on their publication date: January 2001 to December 2005, January 2006 to December 2012, and January 2013 to June 2017. I chose these time periods to roughly divide the number of individual recommendations published in each time period into thirds. I used these same time periods for subsequent analyses, as described below. In all cases, I varied the boundaries of the time periods by one to two years in either direction and evaluated how doing so affected key observations.

Mapping topic updates to previously issued recommendation statements

For each recommendation statement issued on an updated topic, I compared the updated recommendations to the most recent previously issued recommendations on the topic. The topic covered by an updated recommendation statement, however, does not always precisely correspond to the topic covered by a single previously issued recommendation statement. For cases in which the topic covered by an updated recommendation statement diverged from a previously reviewed topic, I only compared the relevant previously issued recommendations to the updated recommendations on the topic. Similarly, for cases in which the topic covered by an updated recommendation statement included recommendations covered by two or more previously issued recommendation statements, all relevant previously issued individual recommendations were used for making comparisons. Illustrative examples of this strategy are

provided in Appendix A.

Point-based method for assessing the directionality of topic updates

When recommendations for a topic are updated, the specific interventions and subpopulations covered by individual recommendations frequently change. As a consequence, one-to-one relationships between updated individual recommendations and previously issued individual recommendations do not always exist. For this reason, I used a point-based method to measure the directionality of changes made to recommendations at the topic level. For every recommendation statement issued on an updated topic, I assigned each individual recommendation a point value ranging from -1 to +1 based on its letter grade (Table 4).

The method for assigning points to individual recommendations was chosen for its simplicity. While the recommendation grading system has undergone significant revisions since the publication of the second edition of the *Guide*, the essence of the grade definitions for "A", "B", and "D" recommendations has remained relatively stable over time.[5] Similarly, while the standard recommendation language and suggestions for practice associated with "C" recommendations have undergone periodic revisions, the requirement of at least "moderate certainty" (or at least "fair evidence" prior to May 2007) of small net benefit in the assignment of a "C" letter grade has remained stable since the third Task Force significantly updated the methods for assigning letter grades.[3,5] In the grading system used by the second Task Force, a "C" letter grade was assigned when insufficient evidence was available to determine whether or not the routine use of an intervention would improve clinical outcomes.[33] Given that "I" statements and have consistently indicated that the Task Force either found insufficient evidence to make a judgment about the effectiveness of an intervention or sufficient evidence that

magnitude of net benefit of routinely offering a service is small, all "I" statements and "C" recommendations were assigned a point value of zero. For negative recommendations, the second Task Force issued one of two letter grades ("D" or "E") based on the level of evidence against the routine use of the preventive service. In the current grading system, however, only a single negative letter grade ("D") exists. For this reason, all "D" and "E" recommendations across time were assigned a score of -1.

Table 4. Assignment of point values to individual recommendations

Post-1996 grade	**Assigned point value**
A	+1
B	+0.5
C	0
D	-1
I	0
1996 grade	**Assigned point value**
A	+1
B	+0.5
C	0
D	-1
E	-1

For each topic update, I calculated two different "directionality scores" reflective of the overall change in the letter grades assigned to individual recommendations on a topic compared to the most recent previously issued recommendations on the same topic (Figure 1). Based on publication date, I aggregated topic updates into three time periods as specified above. For each time period and method for calculating the directionality score, I tabulated the number and proportion topic updates assigned positive, neutral, and negative directionality scores.

Directionality score (Method 1)
= *Mean point value of updated recommendations*
– *Mean point value of previously issued recommendations*

Directionality score (Method 2)
= *Sum of points for updated recommendations*
– *Sum of points for previously issued recommendations*

Figure 1. Calculation of point-based directionality scores for topic updates

Classification-based method for assessing the directionality of topic updates

To supplement the point-based directionality scores, I additionally used a classification-based system to assess the directionality of topic updates. For these assessments, I only considered recommendations that applied to interventions and populations covered by both the updated and previously issued sets of recommendations on a topic. For each topic update, I individually categorized both the updated and prior sets of recommendations based on whether the Task Force had recommended in favor of ("positive"), against ("negative"), or neither for nor against ("neutral") the use of the preventive services under consideration (Figure 2, Step 1 and Step 2). In making these assessments, "C" recommendations were considered "neutral", even though the definition of this letter grade has changed over time. A set of recommendations only received a "neutral" overall assessment if it included no positive or negative recommendations. When a set of recommendations included both positive and negative recommendations, I prioritized the positive recommendations in making an overall assessment (see Appendix A for examples).

Based on these assessments, I assigned a "letter score" to each topic update reflective of the change in letter grades assigned to recommendations for preventive services covered by both

the updated and prior sets of recommendations (Figure 2, Step 3). If both the updated and prior set of recommendations for a topic received a "positive" overall assessment, I evaluated whether the letter grades for the considered recommendations became more positive, less positive, or remained equally as positive. Similarly, if both the updated and prior set of recommendations received a "negative" overall assessment, I evaluated whether the letter grades for the considered recommendations became more negative, less negative, or remained equally as negative. Finally, I secondarily categorized each topic update based on the directionality of its assigned letter score (Figure 2, Step 4).

Specific rules were developed for issuing letter scores in special cases, such as when linkages between prior and updated recommendations could not be easily inferred. These rules and illustrative examples are provided in Appendix A. In general, however, when the change in recommendations was unclear, I assigned a neutral letter score. Furthermore, I did not consider a previously issued individual recommendation on a topic if the Task Force chose not to update it. Similarly, I did not consider individual recommendations for newly evaluated interventions or populations. On two occasions, however, I assigned a letter score of "negative to positive" when the Task Force issued a single positive recommendation for an intervention in a high-risk population after having previously issued a single negative recommendation for its use in a low-risk population (without this exception, these topic updates could not be assigned a score).

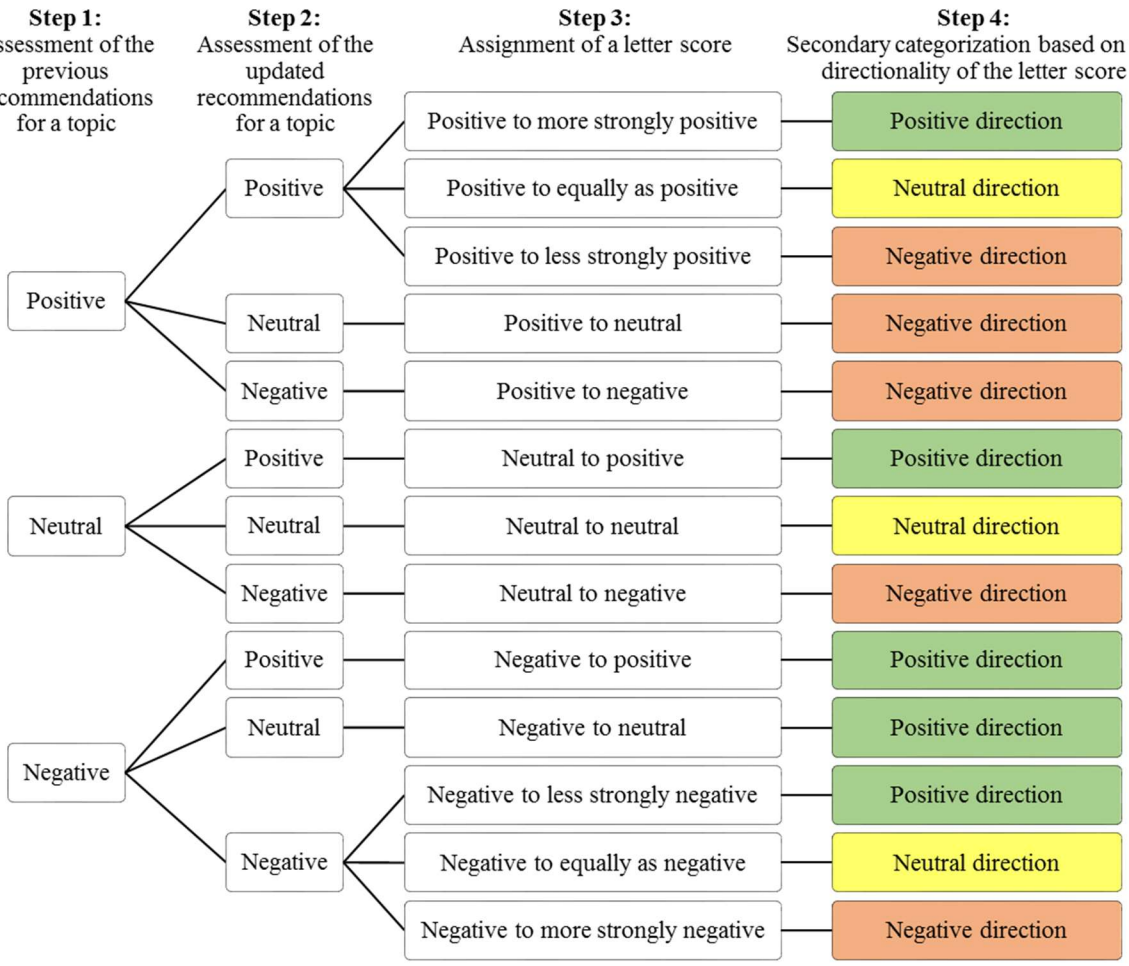


Figure 2. Approach to assigning letter scores to recommendation statements for updated topics.

For topic updates assigned a variant of a "positive to positive" letter score, I additionally assigned an "intensity score." The intensity score reflects the change in the breadth of preventive services issued a positive recommendation for a given topic irrespective of the strength of the letter grades assigned to the recommendations. Recommendations for screening interventions, for instance, can apply to populations of different sizes, suggest varying screening intervals, and/or specify screening modalities of differing sensitivities. In many cases, the Task Force does not specifically recommend a single intervention, screening interval, or other characteristic of a preventive service related to its intensity, but does discuss clinical considerations relevant to these characteristics within the text of the recommendation statement. For the purposes of

assigning an intensity score to a topic update, I only considered clearly recommended characteristics of a preventive service. The criteria used to assign each of the three possible intensity scores are outlined in Table 5. Several examples of the assignment of intensity scores to topic updates are included in Appendix A. For a subset of topic updates, a second researcher (RH) independently assigned letter scores and intensity scores. Differences in the assignment of these scores were resolved through discussion. This process secondarily led to the refinement of the classification system.

Table 5. Non-exhaustive list of criteria used to assign intensity scores to topic updates (only changes in positive recommendations considered)

Same intensity (all criteria must apply) • Recommendations apply to same population • Recommended screening or counseling intervals remain unchanged • Recommended ages for starting or stopping provision of preventive service remain the same • For preventive medications, the recommended dosing remains unchanged
Increased intensity (at least one criterion must apply) • Recommendations apply to larger population • Recommended screening or counseling intervals decrease (i.e. more frequent) • Recommended ages for starting or stopping provision of preventive service become broader • For preventive medications, the recommended dosing is increased
Decreased intensity (at least one criterion must apply) • Recommendations apply to smaller population • Recommended screening or counseling intervals increase (i.e. less frequent • Recommended ages for starting or stopping provision of preventive service become narrower • For preventive medications, the recommended dosing is decreased

For all topic updates issued from 2001 to 2017, I calculated the number and proportion issued each of the possible letter scores. I then aggregated topic updates into three time periods as specified above. I calculated the number and proportion of topic updates assigned positive, neutral, and negative letter scores for each time period. For topic updates issued intensity scores, I similarly calculated the number and proportion topic updates assigned each of the possible intensity scores stratified by time period.

Tracking dropped and new "D" recommendations against the use of preventive services

The Task Force sometimes chooses not to update a previously issued individual recommendation for a specific intervention or subpopulation. Occasionally, a previously issued negative recommendation is not updated. The 2016 recommendation statement on breast cancer screening, for instance, did not issue a recommendation for teaching women how to perform the breast self-examination.[35] In the previously issued 2009 recommendation statement on breast cancer screening, this intervention received a "D" recommedation.[36] I reviewed all recommendation statements to identify other dropped "D" recommendations. For comparison purposes, I also reviewed all recommendation statements to identify new "D" recommendations for interventions or populations that had not previously been issued a recommendation.

RESULTS

Summary of active USPSTF recommendations

As of June 1, 2017, the USPSTF lists 98 topics on its website, including 84 active topics.[30] For each active topic, the Task Force has published one or more individual recommendations with associated letter grades. The currently active topics cover 132 unique recommendations. The number and proportion of active recommendations stratified by grade is depicted in Table 6. Notably, "I" statements constitute the greatest proportion and "C" recommendations constitute the smallest proportion of letter grades assigned to individual recommendations. Approximately twice as many recommendations endorse the routine use of a preventive services ("A" or "B" recommendations) compared to those that recommend against the routine use of a service ("D" recommendations).

Table 6. Number and proportion of active recommendations by grade (as of June 1, 2017)

Grade	All active recommendations		Active recommendations issued between June 1, 2012 and June 1, 2017	
	Number	Proportion	Number	Proportion
A	14	10.6%	8	8.2%
B	33	24.8%	27	27.6%
A or B	47	35.6%	35	35.7%
C	7	5.3%	6	6.1%
D	25	18.9%	13	13.3%
I	53	40.2%	44	44.9%
Total	132	n/a	98	n/a

In order for the National Guidelines Clearinghouse to accept a submitted clinical practice guideline, the guideline must have been developed, reviewed, or revised within the past five years.[34] A total of 98 currently active recommendations have been issued within the past five years covering 63 topics (75% of active topics). Similar to the entire set of active

recommendations, positive ("A" or "B") recommendations outnumber negative recommendations, while "I" statements are the most common.

Of all current recommendations statements issued on active topics, half include at least one positive recommendation; whereas, less than a quarter include at least one negative recommendation (Table 7). Few recommendation statements include a "C" recommendation, while a majority include at least one "I" statement.

Table 7. Number and proportion of active recommendation statements with individual recommendations of certain grades (as of June 1, 2017); total number of active topics = 84

Recommendation statement includes:	Number of topics	Proportion of topics
At least one "A" recommendation	12	14.3%
At least one "B" recommendation	31	36.9%
At least one "A" or "B" recommendation	42	50.0%
At least one "C" recommendation	7	8.3%
At least one "D" recommendation	20	23.8%
At least one "I" statement	45	53.6%

Allocation of USPSTF recommendation grades over time

The number of individual recommendations issued by year and grade is depicted is Figure 3. Since 2001, the USPSTF has issued 164 recommendation statements covering 288 individual recommendations. On a year to year basis, significant heterogeneity exists in both the total number of issued recommendations and the proportion of recommendations issued by grade (for a detailed breakdown, see Appendix B, Table B5). In 2010, for instance, the Task Force issued only a single recommendation compared to 23 in the previous year.

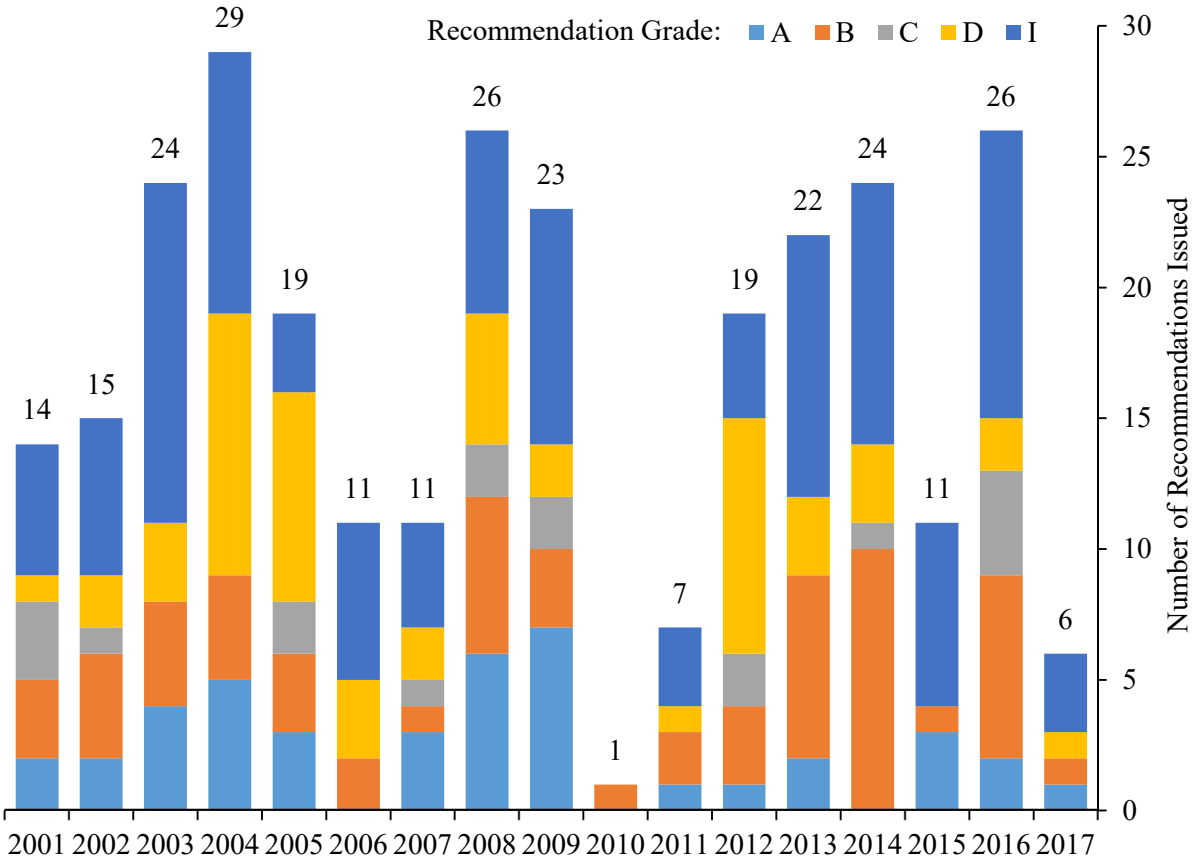
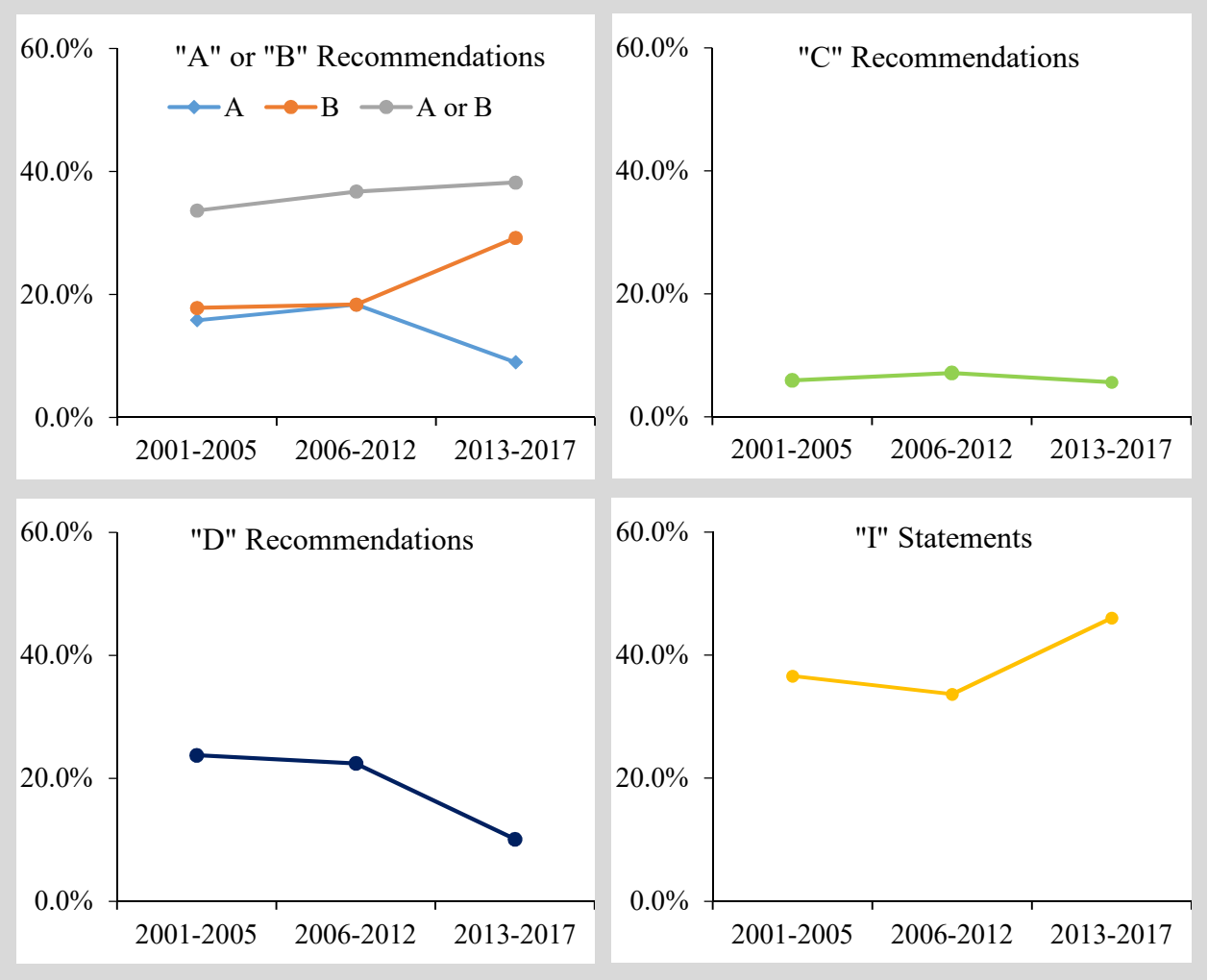


Figure 3. Number of individual USPSTF recommendations issued by letter grade per year (as of June 1, 2017).

When recommendations are grouped into three time periods based on publication date, trends in the allocation of recommendation grades can be observed (Figure 4). While the proportion of all positive recommendations published during each of these time periods has remained relatively stable, the proportion of "B" recommendations has increased relative to recommendations published in earlier time periods. Conversely, the proportions of published "A" recommendations and "D" recommendations have decreased. Across time periods, relatively few "C" recommendations have been issued. Finally, since 2013, the proportion of issued "I" statements has increased compared to previous time periods. These trends are generally preserved when adjusting the boundaries of the time periods by one to two years in

either direction (see Appendix B, Table B6). Including 2012 in the most recent time period, however, substantially decreases the observed decline in the proportion of issued "D" recommendations compared to earlier time periods. This finding can be explained by the high proportion of "D" recommendations issued in 2012 (9 of 19 recommendations; 47.4%).



Time period	Recommendation grade						Total
	A	B	A or B	C	D	I	
2001-2005	16 (15.8%)	18 (17.8%)	34 (33.7%)	6 (5.9%)	24 (23.8%)	37 (36.6%)	101
2006-2012	18 (18.4%)	18 (18.4%)	36 (36.7%)	7 (7.1%)	22 (22.4%)	33 (33.7%)	98
2013-2017	8 (9.0%)	26 (29.2%)	34 (38.2%)	5 (5.6%)	9 (10.1%)	41 (46.1%)	89
Total	42 (14.6%)	62 (21.5%)	104 (36.1%)	18 (6.3%)	55 (19.1%)	111 (38.5%)	288

Figure 4. The number and proportion of recommendations issued by grade stratified into three time periods. Data included for all individual recommendations issued from 2001 to 2017 (as of June 1, 2017).

Allocation of USPSTF recommendation grades by topic status: new versus updated

Of the 164 recommendation statements published by the Task Force since 2001, 142 statements issued updated recommendations for previously evaluated topics. The remaining 22 statements issued recommendations for new topics. While a majority of all recommendation statements issued a single recommendation for the evaluated topic, 43% issued more than one recommendation (see Appendix B, Figure B2). A majority of recommendation statements included at least one positive recommendation (Table 8). A slightly larger majority of recommendation statements included at least one "I" statement. Smaller proportions of recommendation statements included at least one "D" or at least one "C" recommendation. Notably, greater proportions of recommendation statements issued on new topics included at least one "D" recommendation or at least one "I" statement compared to recommendation statements for updated topics.

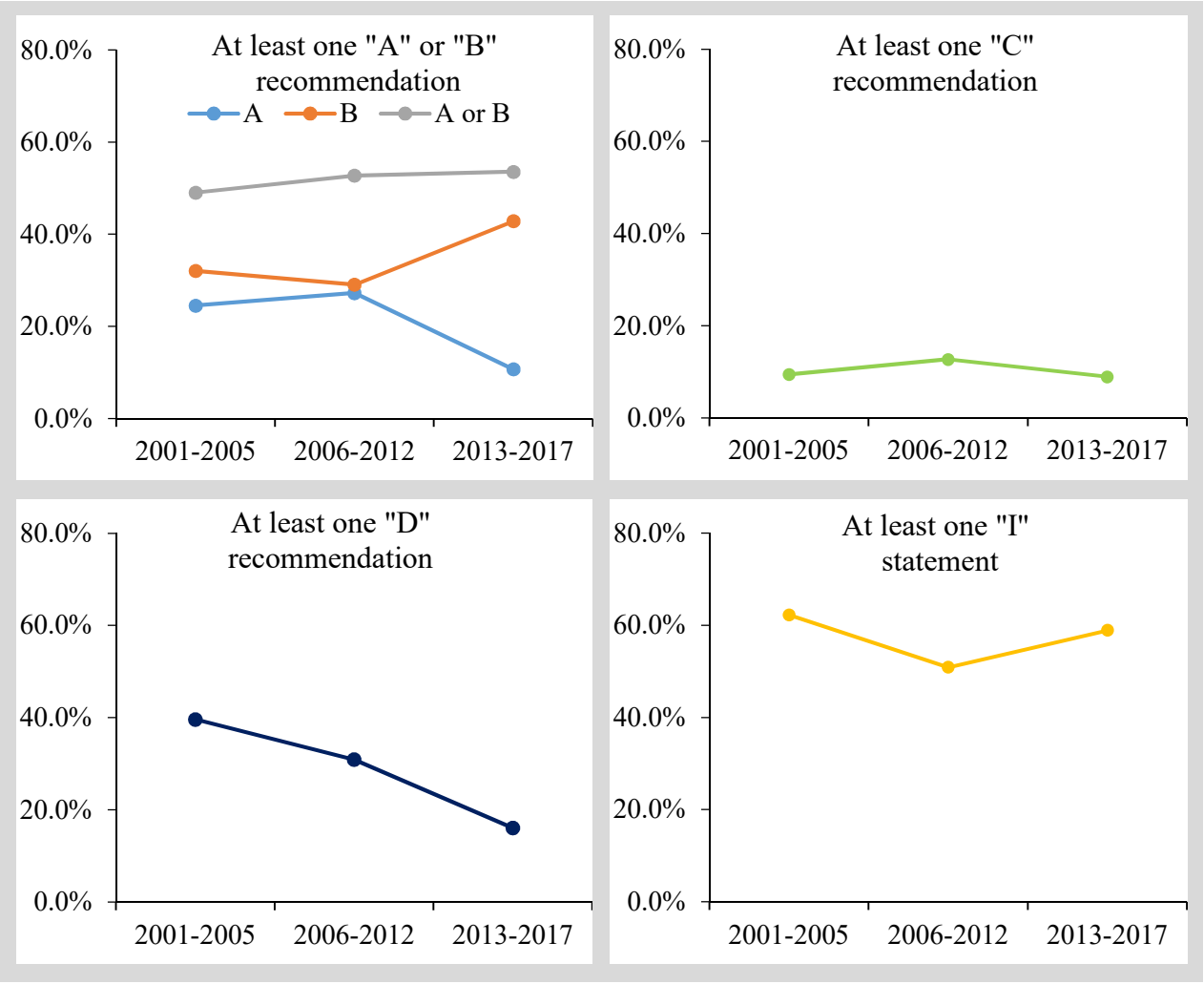
Table 8. Number and proportion of recommendation statements containing at least one individual recommendation of particular grades. Data tabulated for all recommendation statements issued from 2001 to 2017 (as of June 1, 2017).

Topic status	Total	Contains at least one recommendation of the following grades:					
		A	B	A or B	C	D	I
Updated	142	34 (23.9%)	53 (37.3%)	81 (57.0%)	17 (12.0%)	38 (26.8%)	77 (54.2%)
New	22	0 (0.0%)	4 (18.2%)	4 (18.2%)	0 (0.0%)	9 (40.9%)	17 (77.3%)
Total	164	34 (20.7%)	57 (34.8%)	85 (51.8%)	17 (10.4%)	47 (28.7%)	94 (57.3%)

Allocation of USPSTF recommendation grades by topic over time

When grouping recommendation statements into three time periods based on publication date, similar findings can be observed compared to those seen for all individual recommendations (Figure 5). Since 2013, a greater proportion of published recommendation statements have included at least one "B" recommendation compared to earlier time periods. Smaller proportions of recommendation statements have included at least one "A" or at least one

"D" recommendation. For all three time periods, a majority of published recommendation statements have included at least one "I" statement. A small uptick in this proportion has occurred over the past several years. Adjusting the boundaries of the time periods by one to two years in either direction preserves these findings (see Appendix B, Table B7).



Time period	Contains at least one recommendation of the following grades:						Total
	A	B	A or B	C	D	I	
2001-2005	13 (24.5%)	17 (32.1%)	26 (49.1%)	5 (9.4%)	21 (39.6%)	33 (62.3%)	53
2006-2012	15 (27.3%)	16 (29.1%)	29 (52.7%)	7 (12.7%)	17 (30.9%)	28 (50.9%)	55
2013-2017	6 (10.7%)	24 (42.9%)	30 (53.6%)	5 (8.9%)	9 (16.1%)	33 (58.9%)	56
Total	34 (20.7%)	57 (34.8%)	85 (51.8%)	17 (10.4%)	47 (28.7%)	94 (57.3%)	164

Figure 5. The number and proportion of recommendation statements containing at least one individual recommendation of a particular grade stratified into three time periods. Data for all recommendations statements issued from 2001 to 2017 is included (as of June 1, 2017).

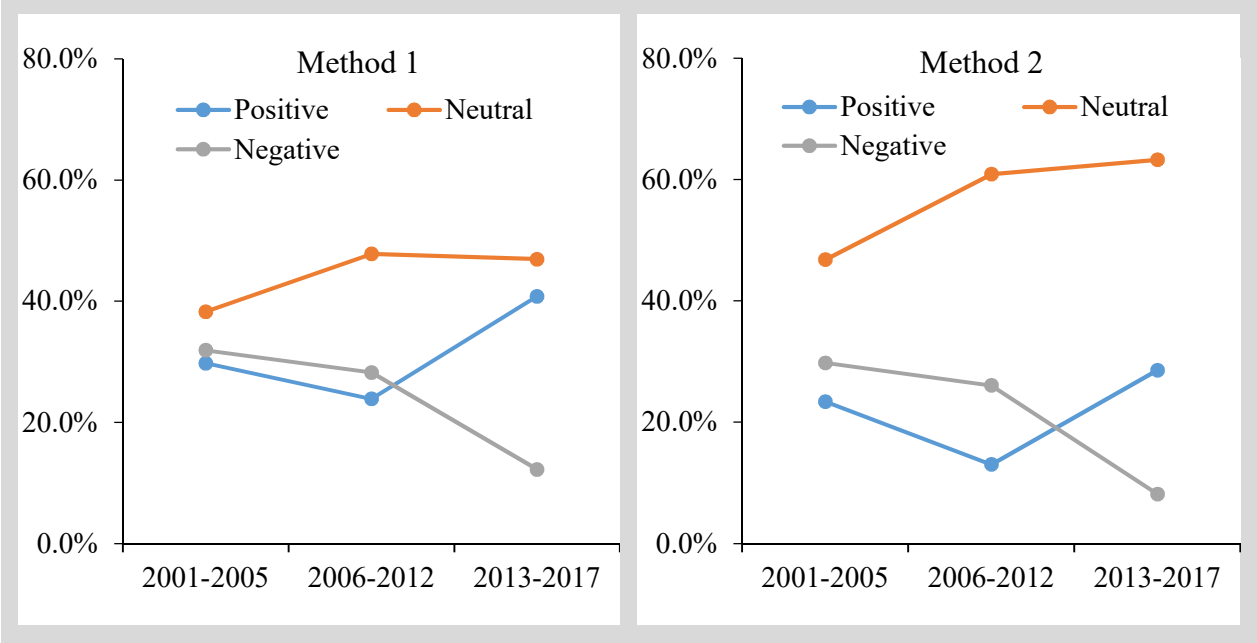
Point-based assessment of the directionality of topic updates over time

Of the 142 recommendation statements issued on updated topics since 2001, a neutral directionality score was the most commonly assigned score (Table 9) using both point-based assessment methods. A larger proportion of topic updates were assigned a positive directionality score compared to a negative score using method 1. For method 2, however, similar proportions of topic updates were assigned positive and negative directionality scores.

Table 9. Number and proportion of topic updates by directionality assessed using two point-based assessment methods; n = 142. Data tabulated for all recommendation statements issued on updated topics from 2001 to 2017 (as of June 1, 2017).

	Point-based directionality score		
	Positive	**Neutral**	**Negative**
Method 1	45 (31.7%)	63 (44.4%)	34 (23.9%)
Method 2	31 (21.8%)	81 (57.0%)	30 (21.1%)

Grouping topic updates into three time periods reveals trends in the directionality topic updates over time using both point-based assessment methods (Figure 6). The proportion of topic updates assigned positive directionality scores is greater for updates issued from 2013 to 2017 compared to those issued from 2006 to 2012. Conversely, the proportion of topics updates assigned negative directionality scores is smaller. The proportion of topic updates issued neutral scores is greater for updates issued from 2006 to 2012 compared to updates issued from 2001 to 2005, but is similar when comparing the most recent time period to 2006 to 2012. Adjusting the boundaries of the time periods by one to two years in either direction does not affect these findings (see Appendix B, Table B9).



Time period	Point-based directionality score						Total
	Method 1			Method 2			
	Positive	Neutral	Negative	Positive	Neutral	Negative	
2001-2005	14 (29.8%)	18 (38.3%)	15 (31.9%)	11 (23.4%)	22 (46.8%)	14 (29.8%)	47
2006-2012	11 (23.9%)	22 (47.8%)	13 (28.3%)	6 (13.0%)	28 (60.9%)	12 (26.1%)	46
2013-2017	20 (40.8%)	23 (46.9%)	6 (12.2%)	14 (28.6%)	31 (63.3%)	4 (8.2%)	49
Total	45 (31.7%)	63 (44.4%)	34 (23.9%)	31 (21.8%)	81 (57.0%)	30 (21.1%)	142

Figure 6. The number and proportion of topic updates assigned positive, neutral, and negative directionality scores using two point-based assessment methods stratified into three time periods. Data included for all recommendations statements issued on updated topics from 2001 to 2017 (as of June 1, 2017).

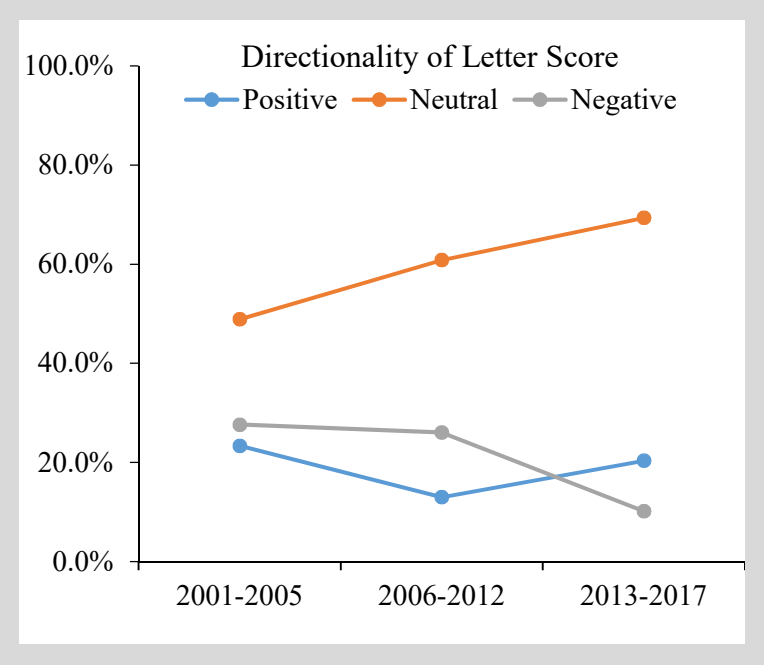
Classification-based assessment of the directionality of topic updates over time

A letter score of neutral directionality was assigned to a majority of the 142 topic updates issued from 2001 to 2017 (Table 10). Of these, a letter score of "positive to equally as positive" was most common. Smaller proportions of updated topics were assigned letter scores of positive directionality and negative directionality. Of the topic updates assigned letter scores of positive directionality, a majority (22 of 27, 81.5%) included a recommendation in favor of routinely offering a preventive service (letter scores of "positive to more strongly positive", "neutral to positive", or "negative to positive").

Table 10. Number and proportion of topic updates by letter score and letter score directionality; n = 142. Data tabulated for all recommendation statements issued on updated topics from 2001 to 2017 (as of June 1, 2017).

Letter score	Number (proportion)	Letter score directionality	Number (proportion)
Positive to more strongly positive	6 (4.2%)	Positive	27 (19.0%)
Neutral to positive	14 (9.9%)		
Negative to positive	2 (1.4%)		
Negative to neutral	5 (3.5%)		
Negative to less strongly negative	0 (0.0%)		
Positive to equally as positive	44 (31.0%)	Neutral	85 (59.9%)
Neutral to neutral	27 (19.0%)		
Negative to equally as negative	14 (9.9%)		
Positive to less strongly positive	15 (10.6%)	Negative	30 (21.1%)
Positive to neutral	5 (3.5%)		
Positive to negative	2 (1.4%)		
Neutral to negative	5 (3.5%)		
Negative to more strongly negative	3 (2.1%)		

When topics updates are grouped into three periods based on the directionality of their assigned letter scores, similar findings result in comparison to those seen using the point-based methods (Figure 7). For topics updates issued from 2013 to 2017, the proportion assigned a letter score of positive directionality is slightly greater compared to topic updates issued from 2006 to 2012, but slightly smaller compared to topic updates issued from 2001 to 2005. The proportion of topic updates assigned a letter score of negative directionality has decreased across each of these periods, while the proportion of topic updates assigned a letter score of neutral directionality has increased.

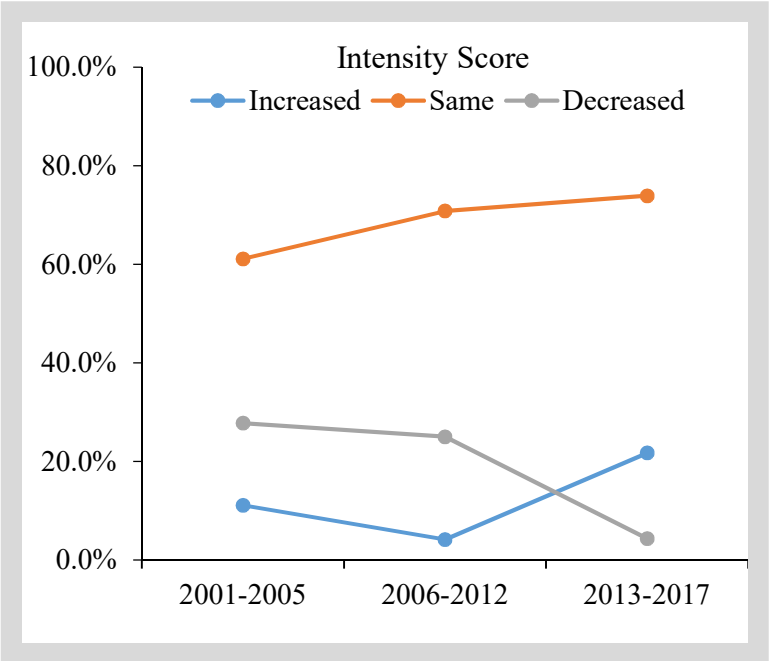


Time period	Directionality of Letter Score			Total
	Positive	Neutral	Negative	
2001-2005	11 (23.4%)	23 (48.9%)	13 (27.7%)	47
2006-2012	6 (13.0%)	28 (60.9%)	12 (26.1%)	46
2013-2017	10 (20.4%)	34 (69.4%)	5 (10.2%)	49
Total	27 (19.0%)	85 (59.9%)	30 (21.1%)	142

Figure 7. The number and proportion of topic updates issued letter scores of positive, neutral, and negative directionality. Data included for all recommendations statements issued on updated topics from 2001 to 2017 (as of June 1, 2017).

A total of 65 (45.8%) topic updates received a variant of a "positive to positive" letter score which made them eligible for the additional assignment of an intensity score. Overall a majority of these updates received an intensity score of "same intensity," while smaller proportions received scores of "increased intensity" and "decreased intensity" (Figure 8). Notably, over the most recent time period (2013 to 2017), a greater proportion of updates received a score of "increased intensity" and a smaller proportion received a score of "decreased intensity" compared to the previous time periods. The proportion of topic updates receiving a score of "same intensity" increased across time periods. Varying the time periods by one to two

years in either direction preserves the trends observed for letter scores and intensity scores (see Appendix B, Tables B10 and B11).



Time period	Intensity Score			Total
	Increased	Same	Decreased	
2001-2005	2 (11.1%)	11 (61.1%)	5 (27.8%)	18
2006-2012	1 (4.2%)	17 (70.8%)	6 (25.0%)	24
2013-2017	5 (21.7%)	17 (73.9%)	1 (4.3%)	23
Total	8 (12.3%)	45 (69.2%)	12 (18.5%)	65

Figure 8. The number and proportion of topic updates issued for each of the possible intensity scores stratified in three time periods from 2001 to 2017 (as of June 1, 2017).

Dropped and new "D" recommendations against the use of preventive services

The Task Force chose not to update a "D" recommendation for a previously evaluated intervention or population on eight identified occasions (Appendix B, Table B11). A majority of these dropped "D" recommendations occurred in the past several years (6 of 8 since 2013). They include instances when the Task Force dropped a recommendation against the use of a preventive service in a low-risk population[37–40], a recommendation against the use of a service in a particular age group[41], and a recommendation against the use of a screening-related

intervention.[35]

On 14 occasions, the Task Force issued a new "D" recommendation for a previously unevaluated intervention or population (Appendix B, Table B12). A majority of these recommendations were issued for new topics (9 of 14). Only one of these recommendations has been issued since 2013. The number of new and dropped "D" recommendations stratified by time period is depicted in Table 11 below.

Table 11. Number of dropped "D" recommendations and new "D" recommendations stratified by time period since 2001 (through June 1, 2017)

Time period	Number of dropped "D" recommendations	Number of new "D" recommendations (intervention or population not previously evaluated)		
		New topics	Updated topics	All topics
2001-2005	2	5	3	8
2006-2012	0	3	2	5
2013-2017	6	1	0	1
Total	8	9	5	14

DISCUSSION

Primary study findings

In this study, I sought to address the recent allegation that the Task Force has become increasingly generous in issuing recommendations in favor of the use of preventive services.[7] If true, I hypothesized that this change could have an observable effect on the allocation of individual recommendation grades, the directionality of topic updates, or both. The results of this study, however, indicate that the proportion of recommendations assigned positive letter grades has only slightly increased over time. Instead, the proportion of negative recommendations issued over the past several years has substantially decreased, while the proportion of "I" statements has increased. Furthermore, the study findings consistently indicate that negative changes in the overall set of recommendations issued for updated topics have become less common over time, while neutral changes (no change in the updated set of recommendations for a topic) have become more common. More recently, positive changes have become increasingly common. Each of these main findings is discussed in greater detail below.

Changes in the allocation of recommendation grades over time

If the Task Force is increasingly promoting preventive services, such a shift should result in a greater proportion of recommendations issued positive letter grades. Instead, the overall proportion of recommendations issued "A" or "B" letter grades has only slightly increased over time. Furthermore, the proportion of recommendations issued "A" letter grades has decreased. Similar trends have occurred for the proportions of recommendation statements including at least one "A" or "B" recommendation. Taken together, these findings indicate that the proportion of

recommendations issued positive letter grades has not substantially increased over time, and conversely, that "A" recommendations have become less common.

While the proportion of positive recommendations issued by the Task Force has remained relatively stable over time, both the proportion of recommendations issued "D" letter grades and the proportion of recommendation statements including at least one "D" recommendation have markedly decreased. These observed reductions have at least three potential contributors. First, the number of new topics including a "D" recommendation has decreased over time. Second, the Task Force has increasingly chosen not to update several "D" recommendations for previously evaluated interventions and/or populations. Finally, the observed increase in "I" statements could be reflective of an increase in the evidence threshold necessary for issuing "D" recommendations.

Changes in the directionality of topic updates over time

An increase in the promotion of preventive services could result from changes in recommendations made when updating previously evaluated topics. In this study, both a point-based and a classification-based method were used to measure the overall directionality of these changes for updated topics. The point-based method considered all recommendations issued on a topic, regardless of whether they covered interventions or populations evaluated by both the updated and previously issued sets of recommendations. The classification-based system, on the other hand, only considered recommendations for interventions and populations covered by both the prior and updated set of recommendation. Despite this difference, both methods yielded similar results. First, regardless of how the directionality of topic updates is assessed, neutral changes (no change in the updated set of recommendations for a topic) have become

progressively more common. Second, there has been a recent increase in positive changes and a sustained decrease in negative changes made when issuing updated recommendations. While these findings could be explained by changes in evidence for evaluated services, they could also indicate that the Task Force has become less hesitant to promote the use of preventive services and/or more reluctant to discourage the use of services.

Limitations

The small number of recommendations issued by the Task Force on an annual basis limits the ability to draw strong inferences about the presence or absence of trends in the allocation letter grades and the directionality of topic updates over time. Because of the substantial heterogeneity in both the total number of recommendations and proportion of recommendations assigned specific letter grades in any individual year, such trends are only observable when grouping recommendations into time periods of longer duration. While most of the key findings of this study are preserved when adjusting the boundaries of the selected time periods, the possibility that some of these findings could be explained by random variability in the issuance of recommendations cannot be excluded. Despite this limitation, the consistency of the findings serves as a strength of the study. Furthermore, since all issued recommendations are included in the analyses, there is no uncertainty in the values reported in the study.

Each of the methods used to evaluate the directionality of topic updates also has distinct limitations. The first point-based method for assessing the directionality of topic updates provides insight into how the average recommendation letter grade issued for individual recommendations for a topic changes when the recommendations issued on a topic are updated. The second method provides insight into the how the quantity of individual recommendations in

favor and against the use of preventive services for a topic change when the recommendations on the topic are updated. Any updated individual recommendation, however, may differ in the specific populations or interventions it covers compared to the previously issued recommendation(s). The point-based methods for assessing the directionality of topic updates do not take these potential changes into account. As such, these scores may not always reflect how the breadth of preventive services recommended by the Task Force on a topic change.

In contrast, the classification-based system for evaluating topic updates only considers recommendations for interventions and populations covered by both the prior and updated set of recommendations on the topic. The letter score reflects changes in the strength of recommendations for interventions in populations covered by both sets of recommendations, while the intensity score reflects changes in the breadth of interventions issued positive recommendations. Unlike the point-based methods for measuring the directionality of topic updates, however, recommendations for interventions or populations evaluated only in the updated or previous set of recommendations on a topic do not factor into the assignment of these scores. Thus, the point-based and classification-based methods for evaluating topic updates are complementary, each offering a different characterization of how the set of recommendations issued on a topic change when updated.

Finally, only a single researcher (GT) assigned letter scores and intensity scores to topic updates. The inter-rater reliability of these scores was not assessed. A second researcher (RH), however, evaluated a selected subset of topic updates, with differences in the assignment of scores resolved through discussion.

Possible explanations of the primary study findings and their implications

Several possible factors could have contributed to the longitudinal changes in the issuance of Task Force recommendations observed in this study. These potential factors include changes in evidence for evaluated services, changes in the methodology for assigning recommendations, political pressures, the link between coverage policy and recommendations, and changes in the thresholds used to delineate recommendation grades. As opposed to one single factor, some combination of these factors (or others) likely explain the findings of this study. The possible influence of each suggested factor is discussed more fully below.

Changes in evidence. A change in the letter grade for a previously issued recommendation may result from a change in the evidence base used to assess the certainty and magnitude of net benefit of the evaluated preventive service. Changes in evidence may also make the issuance of a recommendation less relevant or may justify the issuance of new recommendation for a specific subpopulation or intervention. Across time, several uncontentious changes have been made to recommendations based on new evidence widely deemed sufficient to justify the changes. On other occasions, however, recommendation changes have faced criticism for relying on new evidence considered insufficient to merit such changes. These criticisms raise the question of whether other factors, beyond changing evidence, could be responsible for the broad changes in the allocation of recommendation grades and the directionality of topic updates suggested by this study.

Methodological changes. The methodology used by the Task Force to evaluate evidence, its process for assigning recommendation letter grades, and the standard language associated with letter grades have all significantly evolved over time. Changes in any of one these domains could have broadly affected the issuance of recommendations and contributed to the findings of

this study. Across time, however, the fundamental approach used to develop recommendations has remained stable. The Task Force assesses both the sufficiency of available evidence and the balance of harms and benefits for a preventive service in making a recommendation for or against its use. Thus, while the findings of this study could, in part, be explained by longitudinal changes in the methodology used by the Task Force to issue recommendations, other factors are also likely to be at play.

Political pressures. As amended by the PPACA[42], the Public Health Service Act asserts that "all members of the Task Force …, and any recommendations made by such members, shall be independent and, to the extent practicable, not subject to political pressure."[43] Despite this requisite, the Task Force has not always been able to avoid the political spotlight. The most prominent example of Task Force recommendations entering the political realm occurred during the height of health reform deliberations in 2009. In November of that year, the Task Force published an updated set of recommendations on breast cancer screening, including a controversial "C" recommendation "against routine screening mammography" in women aged 40 to 49 years.[36] While the previously issued recommendation had "made a similar point in different words," the media portrayed this change as a new recommendation against mammography for all women in this age group.[44,45] The Task Force quickly faced a bevy of criticism, including public calls for its dissolution.[46] In December 2009, Senator David Vitter (R-LA) proposed an amendment to the Senate health care bill which required health care legislation and any other provision of law to refer to the previously issued 2002 recommendations on breast cancer screening.[47] The Senate immediately accepted the amendment by unanimous consent agreement. A few days later, the Task Force voted to update the language of its "C" recommendation to clarify its original intent by omitting the widely misinterpreted first

sentence advocating against "routine" screening.[36] Nevertheless, the political fallout generated by this recommendation has had lasting effects. To this day, Congress continues to mandate that all provisions of the law refer to the 2002 breast cancer screening guidelines.[48]

In the immediate aftermath of this controversy, the pace of recommendations issued by the Task Force dramatically dropped. In 2010, the Task Force issued only a single recommendation, a politically placatory "B" recommendation in favor of screening children for obesity. Late in the year, the Task Force cancelled a meeting scheduled to occur immediately prior to the mid-term elections. At the meeting, the Task Force had planned to vote on the controversial topic of screening for prostate cancer.[49] This cancellation led a medical officer at the Agency for Healthcare Research and Quality, which provides support services to the Task Force, to resign in protest and declare that "politics trumped science."[50]

The Task Force waited until May 2012 to publish its updated recommendations on prostate cancer screening, which included an expanded recommendation against PSA-based screening for prostate cancer in all men.[25] These recommendations resulted in significant public outcry similar, although more mooted in intensity, to the reception the 2009 breast cancer screening recommendations received. As a former chair of the Task Force, Ned Calonge, has observed, "I think anytime you use science to kind of fundamentally change what people are used to, I think it's a difficult thing to grapple with."[51] Clearly, the prospect of negative attention has affected the timeline for the release of certain recommendations. This study additionally suggests that the Task Force has become more reluctant to issue negative recommendations and make changes to recommendations that result in the decreased promotion of preventive services. Could the fear of public resistance resulting in political repercussions, at least on a subconscious level, be related to these findings as well?

Coverage linkages. In 2010, the Patient Protection and Affordable Care Act (PPACA) established the requirement for health insurers to provide first-dollar coverage for services with "A" or "B" recommendations.[42] Some commentators argue that this linkage may encourage the Task Force to increasingly issue positive recommendations.[52,53] Steven Woolf (a former Task Force member) and Doug Campos-Outcalt (a former liaison between the Task Force and the American Academy of Family Physicians), for instance, suggest that this linkage exerts "a subliminal pressure [on Task Force members] to reinterpret the evidence knowing the ramifications, and to lower threshold for A and B recommendations" and that it "puts [the] analytic rigor [of the Task Force] at risk by preventing members from concentrating on the science."[52]

If the linkage between Task Force recommendations and coverage policies has had a substantial influence on the issuance of recommendations, one or more potential downstream manifestations might be observable. First, such influence could have led to an increase in the overall proportion of "A" and "B" recommendations issued by the Task Force. The results of this study, however, suggest that the overall proportion of positive recommendations has, at most, only slightly increased over the past several years. Second, increased pressure to issue positive recommendations could have caused updated recommendations to move in an increasingly positive direction. As discussed earlier, this study provides some evidence to support the existence of this phenomenon, although its magnitude may be small. Finally, because of the coverage implications associated with rescinding currently existing "A" and "B" recommendations, the pressure against making such changes could have caused fewer updated recommendations to move in a negative direction. The smaller proportion of recent topic updates assigned negative directionality scores may, in part, be related to this pressure.

Shifting thresholds. In issuing a recommendation letter grade, the Task Force separately considers both the certainty and the magnitude of net benefit for an intervention in a specific population. The USPSTF procedure manual defines the certainty of the magnitude of net benefit as "the width of the conceptual confidence interval given by the evidence to estimate the magnitude of net benefit."[43] Thus, the assessment of certainty is not quantitative, but instead requires the Task Force to judge how well the available evidence for a preventive service fits together across an analytic framework linking the population at risk to health outcomes.

As with its assessment of certainty, the assessment of the magnitude of net benefit requires judgement, especially because the outcomes used to measure benefits and harms are often different and/or measured over different time frames. Weighing the relative value of the considered outcomes depends on the evaluator and may not always be reflective of how an average patient would value these outcomes. Additionally, the absence of clearly defined thresholds for delineating different levels of net benefit (zero/negative, small, moderate, substantial) incorporates further judgement into the assignment of letter grades.

Since USPSTF members serve on a rotating basis, longitudinal differences in the membership of task force could influence the thresholds used to determine both the level of certainty and the level of magnitude of net benefit of evaluated services. Other pressures, such as those discussed above, may have a further subconscious effect on these thresholds. If the thresholds for assigning recommendation grades are changing, shifts in the allocation of recommendation grades and the directionality of topic updates could be observable. As discussed above, several findings of this study suggest the presence of such shifts. The decrease in proportion of "D" recommendations issued over the past several years, for instance, could be reflective of an increase in the threshold for a preventive service to be judged as having moderate

certainty of zero to negative net benefit.

In its draft of the updated recommendations for prostate cancer screening, the Task Force proposes a change in the "D" recommendation against prostate cancer screening in men ages 55 to 69 to a "C" recommendation.[28] The Task Force advocates for this change on the basis of "additional evidence that increased the … certainty about the reductions in risk of dying of prostate cancer and risk of metastatic disease" as well as on "new evidence about and increased use of active surveillance of low-risk prostate cancer, which may reduce the risk of subsequent harms from screening." Could this proposed recommendation change, however, also be reflective of a decreasing threshold needed for a preventive service to be judged as having "small" net benefit?

Suggestions for improvement

The Task Force needs to be aware of trends in the issuance of its recommendations, particularly because they may in part be reflective of influences beyond changes in evidence for the services it evaluates. More broadly, all standing committees that issue clinical guidelines could benefit from monitoring for such trends. Doing so would serve as the first step for identifying pressures that may be influencing the overall allocation of recommendation grades and the propensity for updated recommendations to change in a particular direction.

Second, the possibility that the Task Force may be shying away from issuing recommendations against the use preventive services is concerning. Since its inception, the Task Force has intended to serve as an authority not only on the preventive services that ought to be routinely provided to patients, but also on those that ought not to be routinely provided. Just as the issuance of positive recommendations can bring attention to the underuse of services with net

benefit, negative recommendations can discourage the overuse of services with zero to negative net benefit. While groups such as Choosing Wisely have increased awareness of medical overuse, they do not consistently offer recommendations grounded solidly in evidence. Thus, there exists a need for a group to provide such recommendations. Historically, the Task Force has filled this role. On several occasions, it has issued recommendations against the routine use of preventive services in the face of resistance from the general public and other stakeholders. The Task Force needs to continue its historical legacy of providing this vital guidance to clinicians when the science supports doing so.

Third, determining the level of certainty of the overall evidence and the level net benefit for an evaluated preventive service requires judgement on the part of Task Force. The USPSTF Procedure Manual provides definitions and a set of criteria for each level of certainty.[54] The manual does not specify, however, specific criteria for differentiating levels of net benefit. By providing clear definitions and a set of criteria for each level of net benefit, the Task Force could decrease the potential for shifting interpretations of these levels to influence the overall issuance of its recommendations.

Finally, the Task Force must re-evaluate its method for communicating recommendation grade changes. Currently, the Task Force discusses how updated recommendations compare to the previous recommendations for a given topic in a section located near the end of each recommendation statement. A clear statement underscoring the evidence that merits each change, however, is not always provided. Furthermore, the Task Force does not always clearly articulate its reasoning for dropping recommendations for previously evaluated populations or services. By more clearly communicating its rationale for making these changes, the Task Force may be able to mitigate the potential for misinterpretation of and resistance to them.

CONCLUSIONS

The Task Force has developed a reputation for basing its recommendations on rigorous assessments of evidence. Its commitment to using evidence to drive the development of its recommendations, however, has occasionally led to the issuance of recommendations in opposition to current clinical practice or popular thinking. In the past, criticisms of the Task Force have often focused on the perception that its evidence threshold is greater than necessary for issuing recommendations for or against the use of preventive services.[55] Recently, however, the Task Force has come under fire for issuing several recommendations deemed overly generous in promoting the use of preventive services.[7] This study, however, did not find evidence that the overall allocation of positive recommendations has markedly increased over time. Instead, the Task appears to be issuing fewer "D" recommendations against the routine use of preventive services and decreasingly making changes to recommendations that result in the reduced promotion of services. Beyond changes in the evidence for evaluated services, other factors such as changes in the methodology for assigning recommendations, political pressures, the link between coverage policy and recommendations, and changes in the thresholds used to delineate recommendation grades may explain these findings. Further research is needed to evaluate the extent to which each of these factors has contributed to the trends observed in this study. In the interim, continuously monitoring for trends in the issuance of its recommendations may help the Task Force identify and respond to possible external pressures that may be influencing them.

APPENDIX A: Additional methodological considerations and illustrative examples of the assignment of letter scores and intensity scores

Special considerations for recommendations published in the second edition *Guide*

In 1996, the second Task Force published the second edition of the *Guide* which included recommendations for 70 different preventive care topics.[31] The current practice of publishing recommendation statements for individual topics on a continual basis was not established until the third Task Force began issuing recommendations in 2001. Each chapter in the second edition of the *Guide* corresponds to a preventive care topic and begins with a brief summary of the overall recommendations for the topic. Further details, including letter grades for individual recommendations within a topic, are provided in a "Clinical Intervention" section located at the end of each chapter. Unlike current recommendation statements which include a "Summary of Recommendations" section that clearly delineates each specific recommendation using standard language including its associated recommendation grade, the specific recommendations and associated letter grades for topics in the second edition of the *Guide* are not always clearly denoted within the chapter written on a given topic. An appendix to the *Guide*, however, provides tables of ratings for all of the examined topics and clearly depicts the letter grades associated with each preventive intervention evaluated for a given topic.[33] When comparing recommendations for preventives care topics issued in the second edition of *Guide* with updated recommendations, these tables served as the basis for identifying the individual recommendations made by the second Task Force for each topic. The specific chapter for each topic provided the associated recommendation language and additional context for interpreting each individual recommendation.

For counseling interventions, the second Task Force considered both the evidence that

changing personal behavior could improve health outcomes and the evidence that clinicians could influence behaviors through counseling.[56] Separate recommendation letter grades were issued for specific counseling interventions based on the evidence of the effectiveness of counseling and on the evidence linking behaviors with health outcomes. The authors noted that the effects of counseling for many specific behaviors had never been studied.[56] Accordingly, the second edition of the *Guide* stratified specific recommendations for counseling topics into two categories related to the "Efficacy of Risk Reduction" and the "Effectiveness of Counseling."[33] In some cases, available evidence regarding the effectiveness of counseling patients on certain health behaviors was insufficient to issue a positive recommendation; however, a positive overall recommendation for a counseling intervention was made on the basis of strong evidence for the association between a behavior and health outcome. In these instances, the Task Force argued that advising patients about health-related behaviors is generally safe and inexpensive and could result small behavioral changes leading to important health benefits at a population level.[56] The Task Force, for instance, recommended counseling patients to incorporate regular physical activity into their daily routines on the basis of the proven benefits of regular physical activity in preventing coronary heart disease, hypertension, obesity, and diabetes, even though they concluded that the effect of counseling in promoting physical activity had not been well established.[57]

The third Task Force made several significant modifications to the methodology that is currently used to issue guidelines.[32] For counseling interventions, the practice of providing separate letter grades related to the efficacy of risk reduction associated with specific health behaviors and to the corresponding effectiveness of counseling to modify these behaviors was discontinued. Instead, recommendations for counseling interventions are now based on an

evaluation the overall certainty of evidence of net benefit and its magnitude across an analytic framework which includes linkages between the counseling intervention, behavioral changes, and patient-centered health outcomes (such as reductions in morbidity and mortality).[32,58] To issue a letter grade for or against routinely offering an intervention, the current grading system requires evidence of moderate certainty that directly or indirectly links a preventive service with health outcomes.

Because the letter grades for counseling interventions issued in the second edition of the *Guide* apply to specific linkages within an analytic framework, comparing them to updated recommendations developed using the current methodology is challenging. Under the current methodology, a counseling intervention without sufficient evidence demonstrating either a direct link between the intervention and health outcomes or an indirect link via its effect on eliciting behavioral change would likely be issued an "I" grade. Notably, in the second edition of the *Guide*, the strength of the recommendations related to the effectiveness of counseling interventions never exceeded the strength of the recommendations related to the efficacy of risk reduction for corresponding health behaviors. For several topics, the Task Force issued a positive recommendation related to efficacy of risk reduction for a health behavior, but concluded that insufficient evidence existed to issue a recommendation for or against the effectiveness of counseling to modify the behavior. These interventions would likely have been given "I" letter grades had the current Task Force methodology been applied. In 2002, for instance, the USPSTF issued an "I" statement for behavioral counseling in primary care settings to promote physical activity after finding insufficient evidence to determine whether counseling patients leads to sustained increases in physical activity.[59] Concurrently, the Task Force recognized that substantial evidence supported the efficacy of physical activity in reducing

chronic disease morbidity and mortality. Even though the general conclusions regarding the effectiveness of counseling and the efficacy of physical activity in reducing disease risk remained unchanged from previous review of the topic conducted by the second Task Force, the third Task Force dropped the positive recommendation for behavioral counseling to promote physical activity due to the lack of evidence demonstrating the effectiveness of counseling.[59] A similar pattern was observed for other recommendations related to counseling interventions updated from recommendations made by the second Task Force including those for counseling patients to avoid alcohol-related motor vehicle occupant injuries[60] and counseling unselected patients to promote a healthy diet.[61] Given the differences in the assignment of recommendations to counseling interventions made by the second Task Force, only the recommendations (and associated letter grades) regarding the effectiveness of counseling were considered when making comparisons with updated recommendations that utilized the current methodology for assigning recommendation letter grades. These letter grades likely approximate the letter grades the Task Force would have assigned to counseling interventions had the current methodology been applied at the time.

An exception to this to this rule was made in the comparison of the 2012 recommendations for the prevention of falls in older adults to the corresponding recommendations included in the second edition of the *Guide*. In 2012, the USPSTF assessed the evidence for the effectiveness of multifactorial clinical assessments, clinical management (including vitamin D supplementation and hip protectors), clinical education or behavioral counseling, home hazard modification, and exercise or physical therapy in reducing falls and the negative health outcomes associated with falls in community-dwelling older adults.[62] The Task Force issued two recommendations for elderly community-dwelling adults including a "B"

recommendation for providing exercise or physical therapy and vitamin D supplementation for individuals at increased risk for falls, and a "C" recommendation for routinely performing in-depth multifactorial risk assessments with comprehensive management of identified risks. Specific recommendations were not issued for several other preventive interventions to reduce falls assessed by the Task Force including vision correction, education or counseling, home hazard modification, and others. In the recommendation statement, however, the Task Force did briefly note that these interventions lacked sufficient evidence for or against their use in the prevention of falls in community-dwelling older adults.[62] In the second edition of the *Guide*, recommendations regarding preventive interventions for reducing falls in elderly adults were addressed in the broader chapter on counseling to prevent household and recreational injuries.[63] In this chapter, several interventions related to the prevention of falls in elderly adults, but unrelated to counseling, were assigned recommendation letter grades on the basis evidence of their efficacy in reducing the risk of falls. Because the updated 2012 recommendations also assessed non-counseling interventions for preventing falls, these recommendations were included in the comparison of the updated and historical recommendations for the prevention of falls in elderly adults.

A second exception was made in the comparison of the 2004 recommendations for the prevention of dental caries in preschool children to corresponding recommendations in the second edition of the *Guide*. In 2004, the USPSTF issued a "B" recommendation for the prescription of fluoride supplementation in preschool children whose primary water source is deficient in fluoride and an "I" statement for the routine risk assessment of dental disease risk in preschool children by primary care physicians.[64] In the second edition of the *Guide*, a specific chapter devoted to the prevention of dental carries in preschool children was not included;

however, a broader chapter on counseling for the prevention of dental and periodontal disease risk was included.[65] While counseling for dental and periodontal disease is currently listed as an inactive topic on the USPSTF website, this chapter contained a non-counseling recommendation for the prescription of fluoride supplementation in some children. This recommendation was included in the comparison of the updated 2004 recommendation statement on the prevention of dental carries in preschool children with historical recommendations issued on the topic.

Categorization of updated recommendation statements based on their relationships to previously published recommendation statements

The breadth of preventive services (the topic) covered by a recommendation statement does not necessarily correspond precisely to the topic covered in a previously issued recommendation statement. Over time, several topics have been merged with others or have been split into separate topics. To track changes in the scope of preventive services covered by individual recommendation statements, the scope of each recommendation statement was categorized on the basis of its relationship to previously issued recommendation statements. As described in Table 2, an updated recommendation statement can cover the same topic as a previously issued recommendation statement, merge topics, split topics, mix topics, or evaluate a topic for the first time. For this report, each recommendation statement was categorized on the basis of how the topic it covered mapped to the most recent previously issued recommendation statements on the topic.

Table A1. Classification of the topic covered by a recommendation statement based on its relation to previously issued recommendation statements

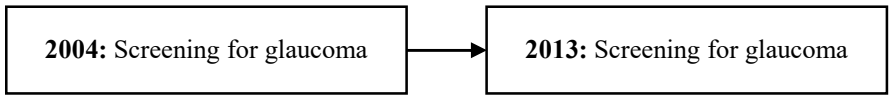
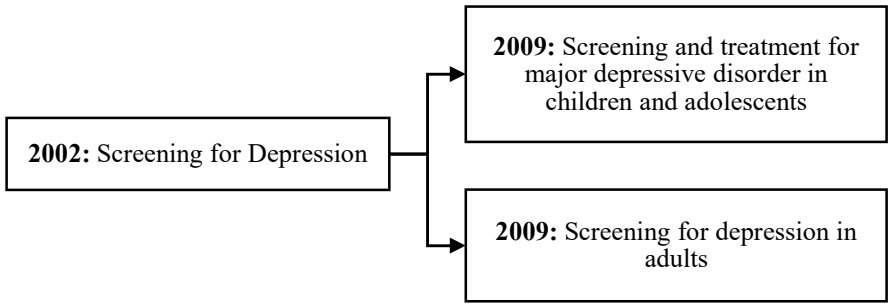
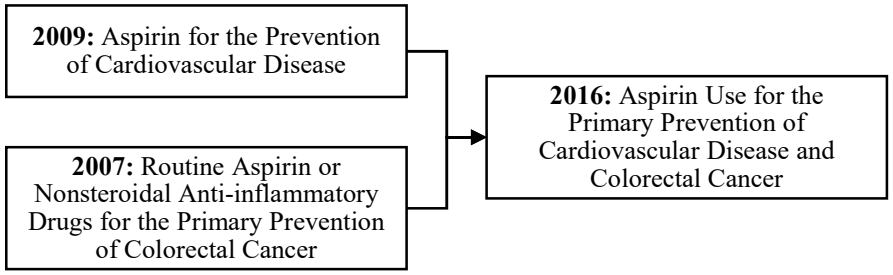
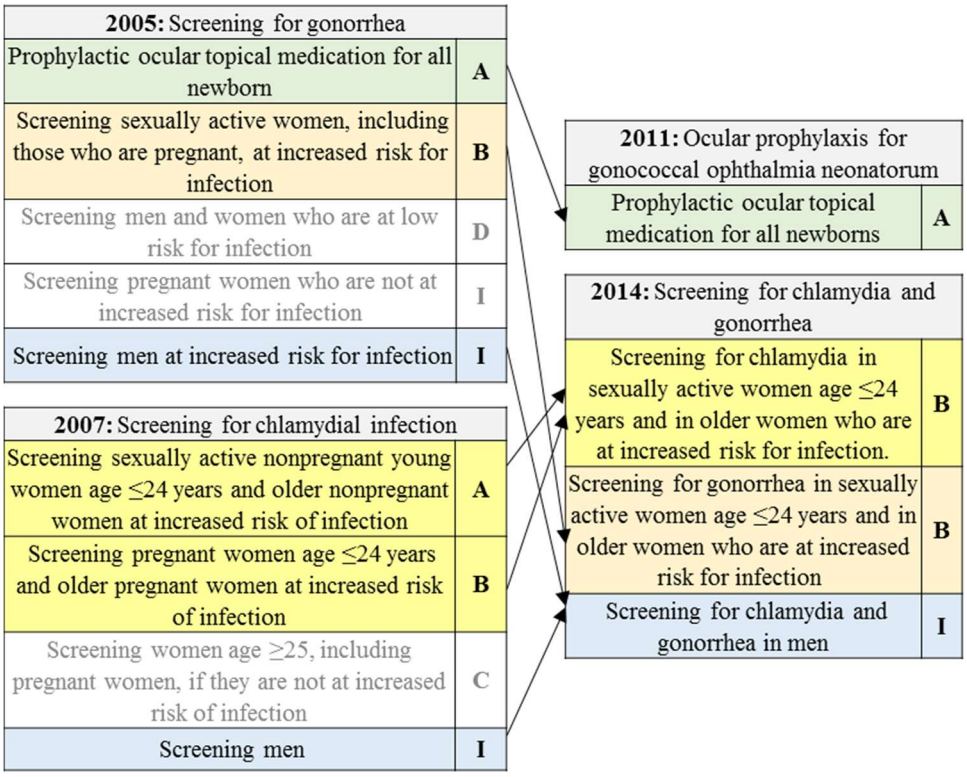
Category	Description and Illustrative Example
Linear topic update[66,67]	Occurs when the scope of preventive services covered by an updated recommendation statement remains unchanged from a previously published recommendation statement
	
Splitting of topics[10,11,68]	Occurs when a preventive services subtopic is updated separately after having been previously evaluated as part of a broader topic
	
Merging of topics[69–71]	Occurs when two preventive services topics that were previously evaluated separately are evaluated together in an updated recommendation statement
	

Table A1. *Continued.*

Mixing of topics[38,72–74]	Occurs when subtopics from multiple previously issued recommendations statements and evaluated together in an updated recommendation statement 
New topic[75]	Occurs when a preventive services topic is evaluated for the first time **2017:** Screening for Obstructive Sleep Apnea in Adults

Illustrative examples of the assignment letter scores and intensity scores

Table A2. Assignment of letter scores – Examples of possible scores

Positive to more strongly positive

Previous Recommendations		Updated Recommendations	
1996: Screening for neural tube defects including folate prophylaxis[31]		**2009:** Folic acid for the prevention of neural tube defects[76]	
Periconceptual folic acid 4.0 mg daily for women with previous affected pregnancy	**A**	A daily supplement containing 0.4 to 0.8 mg of folic acid for all women planning or capable of pregnancy	**A**
Daily multivitamin or multivitamin-multimineral supplement containing folic acid at a dose of 0.4-0.8 mg for women planning pregnancy	**A**		
Daily multivitamin containing 0.4 mg of folic acid for all women capable of becoming pregnant	**B**		
Counseling women planning or capable of pregnancy to increase their dietary folate consumption to 0.4 mg per day as an alternative to taking multivitamins with folic acid	**C**		

Explanation: The "A" recommendation for folic acid supplementation in women planning pregnancy did not change. The "B" recommendation for folic acid supplementation in women capable of becoming pregnant changed to an "A" recommendation.

Directionality: Positive

Positive to equally as positive

Previous Recommendations		Updated Recommendations	
2008: Primary care interventions to promote breastfeeding[77]		**2016:** Primary care interventions to promote breastfeeding[78]	
Interventions during pregnancy and after birth to promote and support breastfeeding	**B**	Interventions during pregnancy and after birth to promote and support breastfeeding	**B**

Explanation: The "B" recommendation for providing interventions during pregnancy and after birth to support breastfeeding did not change.

Directionality: Neutral

Positive to less strongly positive

Previous Recommendations		Updated Recommendations	
1996: Screening for tuberculous infection – including BCG vaccination[31]		**2016:** Screening for latent tuberculosis infection in adults[79]	
Screening for tuberculous infection by tuberculin skin testing for all persons at increased risk of developing tuberculosis	**A**	Screening for latent tuberculosis infection in populations at increased risk	**B**
BCG vaccination against tuberculosis in various subpopulations	**B**		

Explanation: The "A" recommendation in favor of screening for tuberculosis infection in persons at increased risk changed to a "B" recommendation. The recommendation regarding BCG vaccination was referred.

Directionality: Negative

Table A2. *Continued.*

Positive to neutral

Previous Recommendations		Updated Recommendations	
2006: Iron deficiency anemia screening and supplementation[80]		**2015:** Screening for iron deficiency anemia and iron supplementation in pregnant women to improve maternal health and birth outcomes[81]	
Routine screening for iron deficiency anemia in asymptomatic pregnant women.	**B**	Screening for iron deficiency anemia in pregnant women to prevent adverse maternal health and birth outcomes	**I**
Routine iron supplementation for non-anemic pregnant women	**I**	Routine iron supplementation for pregnant women to prevent adverse maternal health and birth outcomes	**I**

Explanation: The "B" recommendation for routine screening for iron deficiency anemia in asymptomatic pregnant women was changed to an "I" statement. There was no change in the "I" statement regarding routine iron supplementation in pregnant women.

Directionality: Negative

Positive to negative

Previous Recommendations		Updated Recommendations	
1996: Postmenopausal hormone prophylaxis[31]		**2002:** Postmenopausal hormone replacement therapy for the primary prevention of chronic conditions[82]	
Clinician counseling of all women around the time of menopause about the possible benefits and risks of postmenopausal hormone therapy and the available treatment options	**B**	Routine use of estrogen and progestin for the prevention of chronic conditions in postmenopausal women.	**D**
		Use of unopposed estrogen for the prevention of chronic conditions in postmenopausal women who have had a hysterectomy	**I**

Explanation: In 1996, a "B" recommendation was issued for counseling women around menopause about the possible benefits and risks of postmenopausal hormone therapy and available treatment options noting that "insufficient evidence [is available] to recommend for or against hormone therapy for all postmenopausal women." In 2002, this recommendation changed to "D" recommendation against combined estrogen and progestin in postmenopausal women (and an "I" statement for estrogen in postmenopausal women who have had a hysterectomy).

Directionality: Negative

Table A2. *Continued.*

Neutral to positive

Previous Recommendations		Updated Recommendations	
2003: Counseling to prevent tobacco use and tobacco-caused disease[83]		**2013:** Primary care interventions to prevent tobacco use in children and adolescents[84]	
Screening for tobacco use or interventions to prevent and treat tobacco use and dependence among children or adolescents	**I**	Primary care clinicians interventions, including education or brief counseling, to prevent initiation of tobacco use among school-aged children and adolescents	**B**
Screening for all adults for tobacco use and Provision of tobacco cessation interventions for those who use tobacco products	**A**		
Screening for all pregnant women for tobacco use and provision of augmented pregnancy-tailored counseling to those who smoke	**A**		

Explanation: While the 2013 recommendation statement focuses on interventions to prevent tobacco use initiation in children and adolescents, it also discusses evidence on the effectiveness of cessation interventions. It issued a "B" recommendation for primary care interventions to prevent the initiation of tobacco use in school-aged children and adolescents. In contrast, the 2003 statement found "little evidence addressing the effectiveness of … counseling children or adolescents to prevent the initiation of tobacco use." It issued a corresponding "I" statement covering these interventions as well as screening and treatment interventions.

Directionality: Positive

Neutral to neutral

Previous Recommendations		Updated Recommendations	
2009: Screening for impaired visual acuity in older adults[85]		**2016:** Screening for impaired visual acuity in older adults[86]	
Screening for visual acuity for the improvement of outcomes in older adults	**I**	Screening for impaired visual acuity in older adults	**I**

Explanation: The "I" statement issued for screening for visual acuity in older adults did not change.

Directionality: Neutral

Neutral to negative

Previous Recommendations		Updated Recommendations	
1996: Screening for asymptomatic carotid artery stenosis (CAS)[31]		**2007:** Screening for asymptomatic carotid artery stenosis[87]	
Insufficient evidence for or against screening asymptomatic persons for CAS, using physical examination or carotid ultrasound	**C**	Screening for asymptomatic CAS in the general adult population	**D**

Explanation: In 1996, insufficient evidence was found to make a recommendation for or against screening for asymptomatic CAS. In 2007, a "D" recommendation against screening for asymptomatic CAS was issued.

Directionality: Negative

Table A2. *Continued.*

Negative to positive

Previous Recommendations		Updated Recommendations	
2004: Screening for hepatitis B virus infection[88]		**2014:** Screening for hepatitis B virus infection in nonpregnant adolescents and adults[39]	
Screening the general asymptomatic population for chronic hepatitis B virus infection	**D**	Screening for hepatitis B virus infection in persons at high risk for infection	**B**
Screening for hepatitis B virus infection in pregnant women at their first prenatal visit	**A**		

Explanation: In non-pregnant persons, the Task Force dropped the "D" recommendation for screening the general asymptomatic population for chronic hepatitis B virus infection in favoring of issuing a "B" recommendation for screening in persons at high risk of infection.

Directionality: Positive

Negative to neutral

Previous Recommendations		Updated Recommendations	
1996: Screening for thyroid disease[31]		**2004:** Screening for thyroid disease[89]	
Insufficient evidence to recommend for or against screening for thyroid disease with thyroid function tests in high-risk patients	**C**	Routine screening for thyroid disease in adults	**I**
Routine screening for thyroid disease with thyroid function tests for asymptomatic children or adults	**D**		

Explanation: The "D" recommendation against the routine screening for thyroid disease in adults was changed to an "I" statement.

Directionality: Positive

Negative to less strongly negative

Explanation: No topic updates received this letter score.

Directionality: Positive

Negative to equally as negative

Previous Recommendations		Updated Recommendations	
2008: Screening for chronic obstructive pulmonary disease (COPD) using spirometry[90]		**2016:** Screening for chronic obstructive pulmonary disease[91]	
Screening adults for COPD using spirometry	**D**	Screening for chronic obstructive pulmonary disease COPD in asymptomatic adults	**D**

Explanation: No change in the "D" recommendation against screening for COPD in adults

Directionality: Neutral

Table A2. *Continued.*

Negative to more strongly negative	
Previous Recommendations	Updated Recommendations
2003: Routine vitamin supplementation to prevent cancer and cardiovascular disease[92]	
Use of beta-carotene supplements, either alone or in combination, for the prevention of cancer or cardiovascular disease	**D**
Use of supplements of vitamins A, C, or E; multivitamins with folic acid; or antioxidant combinations for the prevention of cancer or cardiovascular disease	**I**
2014: Vitamin, mineral, and multivitamin supplements for the primary prevention of cardiovascular disease and cancer[93]	
Use of β-carotene or vitamin E supplements for the prevention of cardiovascular disease or cancer	**D**
Use of single- or paired-nutrient supplements (except β-carotene and vitamin E) for the prevention of cardiovascular disease or cancer.	**I**
Use of multivitamins for the prevention of cardiovascular disease or cancer	**I**
Explanation: In 2003, the use of beta-carotene supplements for the prevention of cancer or cardiovascular disease (CVD) received a "D" recommendation. In 2014, this "D" recommendation was maintained. Additionally, the recommendation for the use of vitamin D in the prevention of cancer and CVD changed from an "I" statement to a "D" recommendation, a change in a negative direction.	
Directionality: Negative	

Table B3. Assignment of intensity scores – Examples of possible scores

Decreased intensity	
Previous Recommendations	Updated Recommendations
2002: Screening for colorectal cancer[94]	
Screening all men and women 50 years of age or older for colorectal cancer	**A**
2008: Screening for colorectal cancer[95]	
Screening for colorectal cancer using fecal occult blood testing, sigmoidoscopy, or colonoscopy in adults, beginning at age 50 years and continuing until age 75 years	**A**
Routine screening for colorectal cancer in adults 76 to 85 years of age	**C**
Screening for colorectal cancer in adults older than age 85 years	**D**
Computed tomographic colonography and fecal DNA testing as screening modalities for colorectal cancer	**I**
Explanation: In 2002, the Task Force did not provide a specific recommendation regarding the age to discontinue screening for colorectal screening, but did state that "discontinuing screening is … reasonable in patients whose age or comorbid conditions limit life expectancy." In 2008, the Task Force specifically recommended against screening in adults older than age 85 years and issued a "C" recommendation for adults age 76 to 85 years. This change represents a decrease in the age range covered by the recommendation in favor of screening. In turn, this change represents a decrease in the intensity of the recommendation.	

Table A3. *Continued.*

Same intensity

Previous Recommendations		Updated Recommendations	
2009: Folic acid for the prevention of neural tube defects[76]		**2017:** Folic acid supplementation for the prevention of neural tube defects[96]	
Daily supplement containing 0.4 to 0.8 mg (400 to 800 µg) of folic acid for all women who are planning or capable of pregnancy	**A**	Daily supplement containing 0.4 to 0.8 mg (400 to 800 µg) of folic acid for all women who are planning or capable of pregnancy	**A**

Explanation: The recommended population (all women who are capable of pregnancy) for folic acid supplementation and the recommended dosing did not change. Thus, the intensity of the recommended intervention remained the same.

Increased intensity

Previous Recommendations		Updated Recommendations	
2009: Screening for depression in adults[11]		**2016:** Screening for depression in adults[9]	
Screening adults for depression when staff-assisted depression care supports are in place to assure accurate diagnosis, effective treatment, and follow-up.	**B**	Screening for depression in the general adult population, including pregnant and postpartum women. Screening should be implemented with adequate systems in place to ensure accurate diagnosis, effective treatment, and appropriate follow-up.	**B**
Screening adults for depression when staff-assisted depression care supports are not in place. There may be considerations that support screening for depression in an individual patient.	**C**		

Explanation: The 2009 "B" recommendation in favor of screening adults for depression applied to "nonpregnant adults, including older adults." The 2016 "B" recommendation in favor of screening applied a broader population, additionally including pregnant and postpartum women. This increase in the breadth of the population covered by the recommendation in favor of screening represents an increase in its intensity.

Examples of challenging topic updates to assign letter and intensity scores

Table A4. Assignment of Letter and Intensity Scores – Examples of Challenging Cases

Example 1

Previous Recommendations

2007: Routine aspirin or nonsteroidal anti-inflammatory drugs (NSAIDs) for the primary prevention of colorectal cancer (CRC)[70]	
Routine use of aspirin and NSAIDs to prevent colorectal cancer in individuals at average risk for colorectal cancer	**D**
2009: Aspirin for the prevention of cardiovascular disease (CVD)[69]	
Use of aspirin for men age 45 to 79 years when the potential benefit due to a reduction in myocardial infarctions outweighs the potential harm due to an increase in gastrointestinal hemorrhage	**A**
Use of aspirin for women age 55 to 79 years when the potential benefit of a reduction in ischemic strokes outweighs the potential harm of an increase in gastrointestinal hemorrhage	**A**
Use of aspirin for cardiovascular disease prevention in men and women 80 years or older	**I**
Use of aspirin for stroke prevention in women younger than 55 years and for myocardial infarction prevention in men younger than 45 years	**D**

Updated Recommendations

2016: Aspirin use for the primary prevention of cardiovascular disease and colorectal cancer[71]	
Low-dose aspirin use for the primary prevention of CVD and CRC in adults aged 50 to 59 years who have a 10% or greater 10-year CVD risk (and additional population specifiers)	**B**
Low-dose aspirin use for the primary prevention of CVD and CRC in adults aged 60 to 69 years who have a 10% or greater 10-year CVD risk (and additional population specifiers)	**C**
Aspirin use for the primary prevention of CVD and CRC in adults younger than 50 years	**I**
Aspirin use for the primary prevention of CVD and CRC in adults aged 70 years or older.	**I**

Letter Score

- **Option 1: Positive to less strongly positive.** The 2007 and 2009 recommendation statements included separate "A" recommendations for aspirin use in populations of both men and women. The 2016 recommendation statement gave "B" and "C" recommendations for different age groups based on CVD risk. Based on this change, a letter score of "positive to less strongly positive" could be assigned.
- **Option 2: Negative to neutral.** The 2009 recommendation statement gave a "D" recommendation for aspirin use in women younger than 55 and men younger than 45; whereas, the 2016 recommendation statement issued an "I" statement for aspirin use in adults younger than 50. Based on this change, a letter score of "negative to neutral" could be assigned.
- Additionally, the 2016 recommendation statement evaluated the use aspirin for the prevention of CRC and CVD concurrently. Thus, the 2007 "D" recommendation against the use of aspirin to prevent CRC across all populations was incorporated into several updated recommendations. Given the absence of clear linkages between the 2007 "D" recommendation and the updated recommendations, this recommendation was not considered in the assignment of the letter score.

- **Rule 1:** For cases in which the grade of both negative and positive recommendations change, prioritize the change in the positive recommendations in the assignment of a letter score.
- **Application of Rule 1:** Application of Rule 1 leads to the selection of "**positive to less strongly positive**" as the letter score

Intensity Score

- The recommended age ranges for aspirin use became smaller in breadth. The updated recommendations also include additional population specifiers (10% or greater 10-year CVD risk, life expectancy of at least 10 years, no increased risk of bleeding, and willingness to take low-dose aspirin for at least 10 years). For these reasons, the population size for which aspirin use is recommended decreased. As such, an intensity score of "**decreased intensity**" is appropriate.

Example 2

Previous Recommendations

2002: Screening for breast cancer[45]	
Screening mammography, with or without clinical breast examination (CBE), every 1-2 years for women aged 40 and older	**B**
Routine CBE alone to screen for breast cancer	**I**
Teaching or performing routine breast self-examination	**I**

Updated Recommendations

2009: Screening for breast cancer[36]	
Biennial screening mammography for women between the ages of 50-74 years	**B**
Routine screening mammography in women aged 40 to 49 years	**C**
Screening mammography in women 75 years and older	**I**
Clinicians teaching women how to perform breast self-examination	**D**
Clinical breast examination beyond screening mammography in women 40 years or older	**I**
Digital mammography or magnetic resonance imaging instead of film mammography as screening modalities for breast cancer	**I**

Letter Score

- **Option 1: Positive to less strongly positive.** In women ages 40 to 49, the recommendation grade for screening mammography changed from "B" to "C". Additionally, for women ages 75 or older, the recommendation grade changed from "B" to "I". The grade remained a "B" for women ages 50 to 74. Based on these changes, a letter score of "positive to less strongly positive" could be assigned.
- **Option 2: Neutral to negative.** The recommendation for teaching women how to perform the breast self-examination changed form "I" to "D". Based on this change, a letter score of "neutral to negative" could be assigned.
- **Rule 2:** For cases in which the grade of both neutral and positive recommendations change, prioritize the change in the positive recommendations in the assignment of a letter score.
- **Application of Rule 2:** Application of Rule 2 leads to the selection of "**positive to less strongly positive**" as the letter score.

Intensity score

- The recommended age range for mammography screening decreased. Furthermore, the recommended screening interval decreased from every 1-2 years to every 2 years. These changes correspond to an intensity score of "**decreased intensity**".

Example 3

Previous Recommendations

2008: Screening for colorectal cancer[95]	
Screening for colorectal cancer using fecal occult blood testing, sigmoidoscopy, or colonoscopy in adults, beginning at age 50 years and continuing until age 75 years	**A**
Routine screening for colorectal cancer in adults 76 to 85 years of age	**C**
Screening for colorectal cancer in adults older than age 85 years	**D**
Computed tomographic (CT) colonography and fecal DNA testing as screening modalities for colorectal cancer.	**I**

Updated Recommendations

2016: Screening for colorectal cancer[41]	
Screening for colorectal cancer starting at age 50 years and continuing until age 75 years	**A**
Screening for colorectal cancer in adults aged 76 to 85	**C**

Letter Score

- The "A" recommendation for screening for colorectal cancer (CRC) in adults ages 50 to 75 did not change. Similarly, the "C" recommendation for screening for CRC in adults ages 76 to 85 (although the definition of the "C" grade changed) did not change.
- Notably, the 2008 "D" recommendation for screening for CRC was dropped; no recommendation was given for this population in the updated 2016 recommendation statement. Within the text of the recommendation statement, however, the Task Force comments that "the USPSTF does not recommend routine screening for colorectal cancer in adults 86 years and older." Nevertheless, since this recommendation was not updated in the 2016 recommendation statement, it was not considered in the assignment of the letter score.
- Similarly, since the 2008 recommendation regarding CT colonography and fecal DNA testing as screening modalities was not updated in 2016, it was not considered in the assignment of the letter score.
- Given that both the "A" recommendation for screening adults ages 50 to 75 and the "C" recommendation for screening adults ages 76 to 85 remained unchanged, a letter score of "**positive to equally as positive**" is appropriate.

Intensity Score

- In its 2016 recommendation on colon cancer screening, the USPSTF decided against emphasizing specific screening approaches and "instead [chose] to highlight there is convincing evidence that colorectal cancer screening substantially reduces deaths from the disease in adults aged 50 to 75 years." Because the USPSTF provided no specific guidance on recommended screening modalities or screening intervals in this recommendation statement, the change in the intervention intensity cannot be inferred. For this reason, an intensity score of "**same intensity**" is appropriate.

Example 4

Previous Recommendations	Updated Recommendations

1996: Screening for colorectal cancer[31]	
Screening all persons aged 50 or over for CRC using fecal occult blood testing (FOBT)	**B**
Screening all persons aged 50 or over for CRC using sigmoidoscopy	**B**
Insufficient evidence for or against routine screening with digital rectal examination	**C**
Insufficient evidence for or against routine screening with barium enema	**C**
Insufficient evidence for or against routine screening with colonoscopy	**C**

2002: Screening for colorectal cancer[94]	
Screening all men and women 50 years of age or older for colorectal cancer.	**A**

Letter Score

- The strength of the recommendation for screening all person age 50 and older for colorectal cancer increased from an "B" recommendation to a "A" recommendation. This change corresponds to a letter score "**positive to more strongly positive**"

Intensity Score

- The 2002 recommendation statement notes that fair to good evidence demonstrates several screening methods are effective in reducing mortality from colorectal cancer. It stops short, however, of making specific recommendations regarding the optimal screening modality or screening interval. As such, there is no clear change in the intensity of the recommended screening interventions. An intensity score of "**same intensity**" is most appropriate.

Example 5

Previous Recommendations

2008: Screening for type 2 diabetes mellitus in adults[97]	
Screening for type 2 diabetes in asymptomatic adults with sustained blood pressure (either treated or untreated) greater than 135/80 mm Hg	**B**
Screening for type 2 diabetes in asymptomatic adults with blood pressure of 135/80 mm Hg or lower.	**I**

Updated Recommendations

2015: Screening for abnormal blood glucose and type 2 diabetes mellitus[98]	
Screening for abnormal blood glucose as part of cardiovascular risk assessment in adults aged 40 to 70 years who are overweight or obese	**B**

Letter Score

- The "B" recommendation for screening a subpopulation of patients for abnormal blood glucose/type 2 diabetes mellitus did not change.
- Notably, in 2008, the recommendation in favor of screening adults with sustained blood pressure greater than 135/80 mm Hg was based on evidence that lowering blood pressure below conventional target values in patients with hypertension and diabetes reduces the incidence of cardiovascular events and cardiovascular mortality.
- In contrast, the 2015 recommendation in favor of screening applied to the population of patients most likely to have glucose abnormalities who could benefit from intensive lifestyle interventions to reduce cardiovascular disease (CVD) risk, namely adults aged 40 to 70 years who are overweight or obese.
- While the specific subpopulations covered by the updated and previous recommendations in favor of screening differed, in both instances a "B" recommendation was issued for a subset of primary care patients at increased CVD risk. Thus, the appropriate letter score is "**positive to equally as positive**".

Intensity Score

- In 2008, screening was recommended for all adults with a blood pressure of 135/80 mm Hg or greater. In 2015, however, the recommendation in favor of screening was based on age and weight (all adults aged 40 to 70 years who are overweight or obesity). Notably, the updated "B" recommendation applies to screening to detect glucose abnormalities, while the prior recommendation applied to screening to detect diabetes mellitus. This difference represents an increase in the sensitivity of the screening intervention. The updated recommendation statement notes that "since the previous recommendation … studies have shown consistent benefit of lifestyle medication to prevent or delay progression to diabetes." The change in the sensitivity of the recommended screening intervention corresponds to an intensity score of "**increased intensity**".

Example 6

Previous Recommendations

1996: Screening for hypertension[31]	
Periodic screening for hypertension for persons greater than or equal to 21 years of age	**A**
Measurement of blood pressure during office visits for children and adolescents (based on the proven benefits from the early detection of treatable causes of secondary hypertension)	**B**

Updated Recommendations

2003: Screening for high blood pressure[99]	
Screen adults aged 18 and older for high blood pressure	**A**
Screening for high blood pressure in children and adolescents to reduce the risk of cardiovascular disease	**I**

Letter Score

- The "A" recommendation for screening adults remained unchanged. The "B" recommendation for screening children and adolescents changed to an "I" statement. Thus, the overall letter score is "**positive to less strongly positive**".

Intensity Score

- **Option 1: Increased intensity.** The recommended age range for screening adults changed from 21 and older to 18 and older. This change represents an increase in the size of the population covered by the recommendation. Based on this change, an intensity score of "**increased intensity**" could be assigned.
- **Option 2: Decreased intensity.** The "B" recommendation for screening children and adolescents changed to an "I" statement. This change represents a decrease in the size of the population the Task Force recommended screening for hypertension. Based on this change, an intensity score of "**decreased intensity**" could be assigned.
- Children and adolescents represent a larger population than adults ages 18 to 21. For this reason, the overall change in the population covered by a recommendation for screening for hypertension decreased in size. As such, an intensity score of "**decreased intensity**" is most appropriate.

Example 7

Previous Recommendations | Updated Recommendations

1996: Screening for iron deficiency anemia including iron prophylaxis[31]	
Hemoglobin analysis or hematocrit for pregnant women at their first prenatal visit	**B**
Insufficient evidence for or against routine use of iron supplements for healthy pregnant women who are not anemic	**C**
Insufficient evidence for or against repeated prenatal testing for anemia in asymptomatic pregnant women lacking evidence of medical or obstetrical complication or high-risk infants not anemic at initial testing	**C**
Screening for anemia with hemoglobin or hematocrit in high-risk infants, preferably at 6-12 months of age	**B**
Insufficient evidence to recommend for or against routine testing for anemia in other asymptomatic persons	**C**
Insufficient evidence for or against routine use of iron supplements for healthy infants who are not anemic	**C**
Insufficient evidence for or against routine testing for anemia in high-risk children	**C**
Encouraging mothers to breastfeed their infants and advising parents to include iron-enriched foods in the diet of infants and young children for the primary prevention of iron deficiency anemia	**B**

2006: Screening for iron deficiency anemia including iron supplementation for children and pregnant women[80]	
Screening for iron deficiency anemia in asymptomatic pregnant women	**B**
Routine iron supplementation for non-anemic pregnant women	**I**
Routine screening for iron deficiency anemia in asymptomatic children aged 6 to 12 months	**I**
Routine iron supplementation for asymptomatic children aged 6 to 12 months who are at increased risk for iron deficiency anemia	**B**
Routine iron supplementation for asymptomatic children aged 6 to 12 months who are at average risk for iron deficiency anemia.	**I**

Letter Score

- Both recommendation statements cover four subtopics: screening for anemia in pregnant women, iron supplementation in pregnant women, screening for anemia in children, and iron supplementation in children.
- Unlike the 1996 recommendation statement, the 2006 statement does not include specific recommendations regarding repeat testing for anemia in pregnant women and high-risk infants, routine testing for anemia in high-risk children (older than 12 months), or breastfeeding and the use of iron-enriched foods in the diet of infants and young children.
- **Screening in pregnant women**: Both statements issued a "B" recommendation for screening pregnant women for anemia. The 2006 statement noted that "the USPSTF found … no studies that specifically addressed the accuracy of screening tests in asymptomatic women," but stated that hemoglobin is a sensitive test for iron deficiency anemia.
- **Iron supplementation in pregnant women**: Both statements found insufficient evidence to issue a recommendation regarding routine iron supplementation in pregnant women.
- **Screening in children**: In 1996, a "B" recommendation was issued for screening infants (ages 6 to 12 months) at increased risk of iron deficiency anemia. For infants at average risk of iron deficiency anemia, insufficient evidence existed to make a recommendation for or against screening (this population is presumably covered by the

recommendation for screening in other asymptomatic persons). Similarly, in 2006, insufficient evidence was found to issue a recommendation regarding routine screening in asymptomatic infants. Unlike in 1996, a specific recommendation for screening infants at high risk of iron deficiency anemia was not issued in 2006.

- **Iron supplementation in children**: Both statements found insufficient evidence to issue a recommendation regarding routine iron supplementation in asymptomatic infants. In 2006, however, a "B" recommendation was issued routine iron supplementation in asymptomatic children at increased risk for iron deficiency anemia.
- No changes in grades were made for comparable recommendations in 2006 compared to 1996. As such, the appropriate letter score is "**positive to equally as positive**".

Intensity Score

- From 1996 to 2006, the intensity of the recommended screening intervention for pregnant women did not clearly change.
- In 1996, a "B" recommendation was issued for screening high-risk infants for iron deficiency anemia. In 2006, a "B" recommendation was issued for the routine iron supplementation in infants at increased risk of iron deficiency anemia. The 2006 recommendation represents an increase in the intensity of the recommended intervention because it does not require screening of high-risk infants for anemia prior to the use of iron supplementation. Thus, an intensity score of "**increased intensity**" is appropriate.

Example 8

Previous Recommendations

2005: Screening for abdominal aortic aneurysm[100]	
One-time screening for abdominal aortic aneurysm (AAA) by ultrasonography in men aged 65-75 who have ever smoked	**B**
Screening for AAA in men aged 65-75 who have never smoked.	**C**
Routine screening for AAA in women	**D**

Updated Recommendations

2014: Screening for abdominal aortic aneurysm[101]	
One-time screening for AAA with ultrasonography in men ages 65 to 75 years who have ever smoked	**B**
Screening for AAA in men ages 65 to 75 years who have never smoked	**C**
Screening for AAA in women ages 65 to 75 years who have ever smoked	**I**
Screening for AAA in women who have never smoked	**D**

Letter Score

- The "B" recommendation for screening men ages 65 to 75 who have ever smoked did not change.
- The "D" recommendation against screening women who have never smoked did not change (in 2005, this population is included in the "D" recommendation against screening for AAA in all women).
- In 2014, an "I" statement was issued for screening women ages 65 to 75 who have ever smoked. In 2005, the "D" recommendation against routine screening in women applied to this population.
- Overall, a letter score of "**positive to more strongly positive**" is appropriate because the recommendation against screening became more positive in women ages 65 to 75 who have ever smoked (shifting from a "D" recommendation to an "I" statement) while the recommendations for other subpopulations remained unchanged.

Intensity Score

- **Option 1: Increased intensity.** The decrease in the size of the population covered by the "D" recommendation against screening in women could result in a greater number of women who are screened (although, the "I" statement for women ages 65 to 75 who have ever smoked does not provide guidance for or against screening). As such, an intensity score of "**increased intensity**" could be assigned.
- **Option 2**: **Same intensity.** The recommendations for screening in men remained unchanged. In both recommendation statements, no sub-population of women received a positive recommendation for screening. Thus, there was no change in the size of the population receiving a positive recommendation for screening.
- **Rule 3:** Only consider changes in the intensity of interventions and populations receiving positive recommendations when assigning an intensity score.
- **Application of Rule 3:** Application of Rule 3 leads to the selection of "**same intensity**" as the intensity score.

Example 9

Previous Recommendations

1996: Screening for abdominal aortic aneurysm[31]	
Insufficient evidence for or against routine screening for AAA with abdominal palpation	**C**
Insufficient evidence for or against routine screening for AAA with ultrasound	**C**

Updated Recommendations

2005: Screening for abdominal aortic aneurysm[100]	
One-time screening for AAA by ultrasonography in men aged 65-75 who have ever smoked	**B**
Screening for AAA in men aged 65-75 who have never smoked.	**C**
Routine screening for AAA in women	**D**

Letter Score

- **Option 1: Neutral to neutral.** In 1996, insufficient evidence was found to make a recommendation for or against for screening for AAA with ultrasound. In 2005, a "B" recommendation was issued in favor of screening for AAA in a sub-population of men and a "D" recommendation was issued against screening in women. One could argue that these because recommendations are in opposite directions, the overall directionality of the 2005 recommendations for AAA screening is neutral. Under this interpretation, a letter score of "**neutral to neutral**" would be appropriate.
- **Option 2: Neutral to positive.** If the positive recommendation for screening for AAA in a subset of men is prioritized over the recommendation against screening in women, a letter score of "**neutral to positive**" would result.
- **Rule 4:** For cases in which a previously neutral recommendation(s) changes to a positive recommendation in one subpopulation and a negative recommendation in another subpopulation, prioritize the positive recommendation in the assignment of a letter score.
- **Application of Rule 4**: Application of Rule 4 leads to the selection of "**neutral to positive**" as the letter score.

Intensity Score

- Not applicable because the 1996 recommendation statement did not include a positive recommendation for screening for AAA in any population.

Example 10

Previous Recommendations | Updated Recommendations

2005: Screening for gonorrhea[72]	
Screening all sexually active women, including those who are pregnant, for gonorrhea infection if they are at increased risk for infection	**B**
Routine screening for gonorrhea infection in men at increased risk for infection	**I**
Routine screening for gonorrhea infection in men and women who are at low risk for infection	**D**
Routine screening for gonorrhea infection in pregnant women who are not at increased risk for infection	**I**
Topical medication for all newborns against gonococcal ophthalmia neonatorum	**A**
2007: Screening for chlamydia[73]	
Screening for chlamydial infection for all sexually active nonpregnant young women age 24 years or younger and older nonpregnant women who are at increased risk	**A**
Screening for chlamydial infection for all pregnant women age 24 years or younger and for older pregnant women who are at increased risk	**B**
Screening for chlamydial infection for women age 25 years or older, regardless of whether they are pregnant, if they are not at increased risk	**C**
Screening for chlamydial infection for men	**I**

2014: Screening for chlamydia and gonorrhea[38]	
Screening for chlamydia in sexually active women age 24 years and younger and in older women who are at increased risk for infection	**B**
Screening for gonorrhea in sexually active women age 24 years and younger and in older women who are at increased risk for infection	**B**
Screening for chlamydia and gonorrhea in men	**I**

Letter Score

- For gonorrhea, the USPSTF issued a "B" recommendation for screening all sexually active women at increased risk of infection in both 2005 and 2014.
- In 2005, the USPSTF also issued a "D" recommendation against routine screening for gonorrhea infection in men and women who are at low risk for infection. No recommendation for screening persons at low-risk of gonorrheal infection was provided in 2014. Similarly, the "I" statement issued in 2005 for screening pregnant women who are not at increased risk for infection was not updated in 2014.
- Insufficient evidence was available in 2014 to issue a recommendation for or against routine screening for either chlamydia or gonorrhea in men. Similar "I" statements were issued in 2005 for gonorrhea screening in men at increased of infection and in 2007 for chlamydial screening in all men
- For chlamydial screening in women, the USPSTF issued a "C" recommendation in 2007 for routinely screening in women 25 and older if not at increased risk of infection. No recommendation was provided for this group in 2014.
- The USPSTF also issued a "B" recommendation in 2014 for chlamydial screening in sexually active women, including pregnant women, ages 24 years and younger and older women at increased risk of infection. In 2007, two recommendations were issued for this population of women: a "B" recommendation for the pregnant women in this group and an "A" recommendation for nonpregnant women in this group. Since the recommendation for the nonpregnant women in this group changed from an "A" recommendation to a "B" recommendation, an overall letter score of "**positive to less**

strongly positive" may be appropriate given this is the only clear recommendation change made.

Intensity Score

- No clear changes were made in the recommended screening intervals, screening modalities, or populations covered by positive recommendations. Thus, an intensity score of "**same intensity**" is appropriate.

Example 11

Previous Recommendations

1996: Screening for chlamydial infection[31]	
Routine screening for chlamydia for all sexually active female adolescents and for other women at high risk for chlamydial infection	**B**
Routine screening of pregnant women at high risk of infection (including age under 25)	**B**
Insufficient evidence to recommend for or against screening all women during pregnancy	**C**
Routine screening for chlamydia is not recommended in the general population of low-risk adults	**D**
Insufficient evidence to recommend for or against routine screening in high-risk men	**C**

Updated Recommendations

2001: Screening for chlamydial infection[102]	
Routinely screening all sexually active women aged 25 and younger, and other asymptomatic women at increased risk for infection, for chlamydial infection	**A**
Routinely screening all asymptomatic pregnant women aged 25 and younger and others at increased risk for infection for chlamydial infection	**B**
Routine screening all asymptomatic low-risk pregnant women aged 26 and older for chlamydial infection.	**C**
Routinely screening asymptomatic low-risk women in the general population for chlamydial infection	**C**
Screening asymptomatic men for chlamydial infection	**I**

Letter Score

- The 1996 "D" recommendation against screening in the general population of low-risk adults changed to a "C" recommendation for asymptomatic low-risk women and to an "I" statement for asymptomatic men.
- Additionally, the 1996 "B" recommendation for screening young sexually active women and other high-risk women changed to an "A" recommendation.
- The "B" recommendation for screening high-risk pregnant women remained unchanged.
- The insufficient evidence grade for screening low-risk pregnant women changed to a "C" recommendation (a neutral change). The insufficient evidence grade for screening high-risk men was broadened to include all asymptomatic men.
- **Recall Rule 1:** For cases in which the grade of both negative and positive recommendations change, prioritize the change in the positive recommendations in the assignment of a letter score.
- **Application of Rule 1:** Given the change in the "B" recommendation for screening young sexually active women and other high-risk women to an "A" recommendation, a letter score of "**positive to more strongly positive**" is appropriate.

Intensity Score

- In 2001, the Task Force did not provide specific guidance on the choice of screening the test or the optimal screening interval or timing of screening in pregnancy. Furthermore, no change was made in the populations issued positive recommendations for screening. Thus, an intensity score of **"same intensity"** is appropriate.

Example 12

Previous Recommendations

2003: Behavioral counseling in primary care to promote a healthy diet[61]	
Intensive behavioral dietary counseling for adult patients with hyperlipidemia and other known risk factors for cardiovascular and diet-related chronic disease by primary care clinicians or by referral to other specialists, such as nutritionists or dietitians.	**B**
Routine behavioral counseling to promote a healthy diet in unselected patients in primary care settings	**I**
2002: Behavioral counseling in primary care to promote physical activity[59]	
Behavioral counseling in primary care settings to promote physical activity	**I**

Updated Recommendations

2014: Behavioral counseling interventions to promote a healthful diet and physical activity for cardiovascular disease prevention in adults with cardiovascular risk factors[103]	
Offering or referring adults who are overweight or obese and have additional cardiovascular disease (CVD) risk factors to intensive behavioral counseling interventions to promote a healthful diet and physical activity for CVD prevention	**B**

Letter Score

- The "B" recommendation for behavioral counseling to promote a healthy diet in a subset of adults with cardiovascular disease risk factors did not change.
- For behavioral counseling to promote physical activity, a recommendation specific to adults with cardiovascular risk factors had not previously been issued.
- As such, the most appropriate letter score is "**positive to equally as positive**".

Intensity Score

- The breadth of interventions recommended in the 2014 recommendations is greater and includes interventions to improve healthy eating, increase physical activity, or a combination of approaches to develop a healthier lifestyle. In contrast, only intensive dietary counseling was previously recommended in adults with cardiovascular risk factors. For this reason, an intensity score of "**increased intensity**" is appropriate.
- In 2003, a "B" recommendation was issued in favor of dietary counseling for all adult patients with hyperlipidemia and other known CVD risk factors, including normal weight patients. Conversely, the 2014 recommendation only applies to overweight or obese adults with CVD risk factors. No recommendation was issued for normal weight adults with CVD risk factors. This change does not necessarily imply a decrease in the breadth of the population covered by the recommendation for dietary counseling, however, because no recommendation was issued in 2014 for normal weight individuals with CVD risk factors.

Example 13

Previous Recommendations

Updated Recommendations

1996: Screening for hepatitis B virus (HBV) infection[31]	
Screening for HBV infection for all pregnant women at their first prenatal visit	**A**
Routine screening for HBV infection in the general population	**D**
Insufficient evidence for or against routinely screening asymptomatic high-risk individuals for HBV infection	**C**

2004: Screening for hepatitis B virus infection[88]	
Screening for HBV infection in pregnant women at their first prenatal visit.	**A**
Routinely screening the general asymptomatic population for chronic HBV infection	**D**

Letter Score

- **Rule 5:** If previously issued and updated recommendation statements issue both positive and negative recommendations for an intervention in different subpopulations, prioritize the positive recommendations in the assignment of a letter score.
- **Application of Rule 5:** The "A" recommendations for screening all pregnant women and the "D" recommendations against screening in the general population did not change. Thus, application of Rule 5 leads to the selection of "**positive to equally as positive**" as the letter score.

Intensity Score

- For pregnant women, the recommendation for screening for HBV infection at the first prenatal visit did not change. Neither recommendation specifies an optimal screening modality. Thus, an intensity score of "**same intensity**" is appropriate.

Example 14

Previous Recommendations

2002: Chemoprevention of breast cancer[104]	
Clinicians should discuss chemoprevention with women at high risk for breast cancer and at low risk for adverse effects of chemoprevention	**B**
Routine use of tamoxifen or raloxifene for the primary prevention of breast cancer in women at low or average risk for breast cancer.	**D**

Updated Recommendations

2013: Medications for risk reduction of primary breast cancer in women[105]	
For women at increased risk for breast cancer and at low risk for adverse medication effects, clinicians should offer to prescribe risk-reducing medications, such as tamoxifen or raloxifene	**B**
Routine use of medications, such as tamoxifen or raloxifene, for risk reduction of primary breast cancer in women who are not at increased risk for breast cancer	**D**

Letter Score

- **Recall Rule 5:** If previously issued and updated recommendation statements issue both positive and negative recommendations for an intervention in different subpopulations, prioritize the positive recommendations in the assignment of a letter score.
- **Application of Rule 5:** The "B" recommendations for discussing harms and benefits of breast cancer chemoprevention in women at increased risk for breast cancer and at low risk for adverse medication effects did not change. Similarly, the "D" recommendations against the routine use of medications for the risk reduction of breast cancer in low or average risk women did not change. Thus, application of Rule 5 leads to the selection of "**positive to equally as positive**" as the letter score.

Intensity Score

- The recommendations did not change. Thus, the an intensity score of **"same intensity"** is appropriate.

Example 15

Previous Recommendations		Updated Recommendations	
2004: Screening for hepatitis C virus infection in adults[106]		**2013:** Screening for hepatitis C virus infection in adults[40]	
Routine screening for hepatitis C virus (HCV) infection in asymptomatic adults who are not at increased risk	**D**	Screening for HCV infection in persons at high risk for infection and for adults born between 1945 and 1965	**B**
Routine screening for HCV infection in adults at high risk for infection	**I**		

Letter Score

- In 2004, a "D" recommendation was issued against screening in persons not at increased risk of infection. In 2013, a positive "B" recommendation was issued for screening in persons at high risk for infection. While these subpopulations are different, the recommendations represent a change from an overall recommendation against screening in a subset of adults to a recommendation in favor of screening in a subset of adults. As such, the most appropriate letter score is "**negative to positive**".

Intensity Score

- Not applicable

Example 16

Previous Recommendations		Updated Recommendations	
2003: Screening for cervical cancer[107]		**2012:** Screening for cervical cancer[108]	
Screening for cervical cancer in women who have been sexually active and have a cervix	**A**	Screening for cervical cancer in women age 21 to 65 years with cytology (Pap smear) every 3 years or, for women age 30 to 65 years who want to lengthen the screening interval, screening with a combination of cytology and HPV testing every 5 years	**A**
Routine use of HPV testing as a primary screening test for cervical cancer	**I**	Screening for cervical cancer with HPV testing, alone or in combination with cytology, in women younger than age 30 years	**D**
Routine use of new technologies to screen for cervical cancer, such as liquid-based cytology, computerized rescreening, and algorithm based screening	**I**	Screening for cervical cancer in women younger than age 21 years	**D**
Routine Pap smear screening in women who have had a total hysterectomy for benign disease	**D**	Screening for cervical cancer in women older than age 65 years who have had adequate prior screening and are not otherwise at high risk for cervical cancer	**D**
Routinely screening women older than age 65 for cervical cancer if they have had adequate recent screening with normal Pap smears and are not otherwise at high risk for cervical cancer	**D**	Screening for cervical cancer in women who have had a hysterectomy with removal of the cervix and who do not have a history of a high-grade precancerous lesion (cervical intraepithelial neoplasia [CIN] grade 2 or 3) or cervical cancer	**D**

Letter Score

- Both recommendation statements issued "D" recommendations against screening in women older than age 65 (with adequate prior screening) and in women with total hysterectomy (without a history of high-grade lesions).
- Additionally, both recommendation statements issued "A" recommendations for screening in subsets of adult women.

- **Recall Rule 5:** If previously issued and updated recommendation statements issue both positive and negative recommendations for an intervention in different subpopulations, prioritize the positive recommendations in the assignment of a letter score.
- **Application of Rule 5:** The "A" recommendations for screening in a subset of women and the "D" recommendations against screening in a subset of women did not change. Thus, application of Rule 5 leads to the selection of "**positive to equally as positive**" as the letter score.

Intensity Score

- The updated recommendations provide guidance on the appropriate age ranges and intervals for screening, including a new recommendation that women younger than age 21 not be screened. In contrast, the 2003 recommendation statement comments that "no direct evidence [demonstrates] annual screening achieves better outcomes than screening every 3 years," but stops short of providing a recommended interval for screening. The 2012 recommendation statement also issued a new recommendation against screening women younger than age 30 with HPV testing; whereas, an "I" statement had previously been issued for the routine use of HPV testing as a primary screening test.
- Overall, in 2003, the recommendations in favor of screening covered a slightly broader population compared to the 2012 recommendations. Unlike in 2012, for instance, the Task Force recommended screening women younger than 21 if they had been sexually active for at least three years. Given this decrease in the breadth of the population covered by a recommendation in favor of screening, an intensity score of "**decreased intensity**" is appropriate.

Example 17

Previous Recommendations

1996: Screening for cervical cancer[31]	
Regular Pap tests for all women who are or have been sexually active and who have a cervix performed at least every 3 years	**A**
Insufficient evidence to recommend for or against an upper age limit for Pap testing (recommendations to discontinue testing in women older than 65 who have had regular previous screening may be made on other grounds)	**C**
Insufficient evidence to recommend for or against routine cervicography or colposcopy screening for cervical cancer in asymptomatic women	**C**
Insufficient evidence to recommend for or against routine testing for HPV infection	**C**

Updated Recommendations

2003: Screening for cervical cancer[107]	
Screening for cervical cancer in women who have been sexually active and have a cervix	**A**
Routine use of HPV testing as a primary screening test for cervical cancer	**I**
Routine use of new technologies to screen for cervical cancer, such as liquid-based cytology, computerized rescreening, and algorithm based screening	**I**
Routine Pap smear screening in women who have had a total hysterectomy for benign disease	**D**
Routinely screening women older than age 65 for cervical cancer if they have had adequate recent screening with normal Pap smears and are not otherwise at high risk for cervical cancer	**D**

Letter Score

- The "A" recommendation for screening a subset of sexually active adult women did not change.
- In 2003, a "D" recommendation was issued for women older than 65 if they have had adequate recent screening with normal Pap smears. Previously, insufficient evidence had been found to issue a recommendation for or against an upper age limit for Pap testing.

- Given the change from an "I" statement to a "D" recommendation against screening in a subset of older women and the unchanged "A" recommendation for screening in sexually active women with a cervix, a letter score of "**positive to less strongly positive**" is appropriate.

Intensity Score

- No specific guidance was given in either recommendation statement regarding the frequency of screening; although, the lack of evidence in favor of screening more frequently than every 3 years was mentioned in both statements.
- In 2003, the upper age limit set for screening represents a decrease in the size of the population in which to perform screening. As such, an intensity score of "**decreased intensity**" is most appropriate.

Example 18

Previous Recommendations

1996: Screening for asymptomatic coronary artery disease[31]	
Routine ECG screening as part of the periodic health visit or pre-participation sports physical is not recommended for asymptomatic children, adolescents, and young adults	**D**
Insufficient evidence to recommend for or against screening middle-aged and older men and women for asymptomatic coronary artery disease (CAD) with resting electrocardiography (ECG), ambulatory ECG, or exercise ECG	**C**

Updated Recommendations

2004: Screening for coronary heart disease[109]	
Routine screening with resting electrocardiography (ECG), exercise treadmill test (ETT), or electron-beam computerized tomography (EBCT) scanning for coronary calcium for either the presence of severe coronary artery stenosis (CAS) or the prediction of coronary heart disease (CHD) events in adults at low risk for CHD events	**D**
Routine screening with ECG, ETT, or EBCT scanning for coronary calcium for either the presence of severe CAS or the prediction of CHD events in adults at increased risk for CHD events	**I**

Letter Score

- The "D" recommendation against routine ECG screening in asymptomatic children, adolescents, and young adults was not updated in 2004.
- In 1996, insufficient evidence was available to recommend for or against screening middle-aged and older men for CAD using ECG. In 2004, a "D" recommendation was issued against screening in low-risk adults and a "I" statement was issued for high-risk adults. This change corresponds to a letter score of "**neutral to negative**"

Intensity Score

- Not applicable

Example 19

Previous Recommendations | Updated Recommendations

1996: Counseling to promote a healthy diet[31]	
Counseling patients to change dietary habits by specially trained counselors (including by trained providers in the office or by referral to registered dietitians or qualified nutritionists)	**B**
Insufficient evidence that nutritional counseling by physicians, as opposed to counseling by dietitians or community interventions, is effective in changing the dietary habits of patients	**C**

2003: Behavioral counseling in primary care to promote a healthy diet[61]	
Routine behavioral counseling to promote a healthy diet in unselected patients in primary care settings	**I**
Intensive behavioral dietary counseling for adult patients with hyperlipidemia and other known risk factors for cardiovascular and diet-related chronic disease delivered by primary care clinicians or by referral to other specialists, such as nutritionists or dietitians	**B**

Letter Score

- In 1996, the Task Force issued a "B" recommendation for dietary counseling in the general primary care population by specially trained educators when physicians "lack the time or skills to perform a complete dietary history, to address potential barriers to changes in eating habits, and to offer specific guidance on meal planning and food selection and preparation."
- Conversely, in 2003, the Task Force issued a "I" statement for routine behavioral counseling to promote a healthy diet in the general population.
- For patients with hyperlipidemia and other risk factors for cardiovascular disease and diet-related chronic disease, the Task Force issued "B" recommendation for intensive behavioral dietary counseling.
- The change from a "B" recommendation for dietary counseling in the general primary care population to an "I" statement for unselected patients and a "B" recommendation for a subpopulation of patients corresponds to a "**positive to less strongly positive**" letter score.

Intensity Score

- Compared to 1996, the updated recommendations in favor behavioral counseling apply to a smaller population. Thus, an intensity score of "**decreased intensity**" is appropriate.

Example 20

Previous Recommendations

2008: Screening for prostate cancer[110]	
Screening for prostate cancer in men age 75 years or older	**D**
Screening for prostate cancer in men younger than age 75 years.	**I**

Updated Recommendations

2012: Screening for prostate cancer[25]	
Prostate-specific antigen-based screening for prostate cancer	**D**

Letter Score

- The "D" recommendation against screening for prostate cancer in men age 75 years and older did not change.
- The "I" statement issued for men younger than age 75 years changed to a "D" recommendation against screening in this population.
- Thus, the overall "D" recommendation against screening in a subpopulation of men became more negative with the change from and "I" statement to a "D" recommendation against screening in men younger than age 75 years. As such, the most appropriate letter score is "**negative to more strongly negative**".

Intensity Score

- Not applicable because the Task Force did not issue recommendations in favor of prostate cancer screening in any population.

Example 21

Previous Recommendations

2002: Screening for osteoporosis in postmenopausal women[111]	
Screening in postmenopausal women who are younger than 60 years of age or in women 60 to 64 years of age who are not at increased risk for osteoporotic fractures	**C**
Routinely screening for osteoporosis in women 65 years of age and older and routine screening beginning at 60 years of age for women at increased risk for osteoporotic fractures	**B**

Updated Recommendations

2011: Screening for osteoporosis[112]	
Screening for osteoporosis in women aged 65 years and older and in younger women whose fracture risk is equal to or greater than that of a 65-year-old white woman who has no additional risk factors	**B**
Screening for osteoporosis in men	**I**

Letter Score

- The "B" recommendation for routinely screening women aged 65 years and older for osteoporosis did not change.
- In 2002, the Task Force issued a "B" recommendation for screening women at increased risk for osteoporotic fractures beginning at 60 years of age. In 2011, this "B" recommendation was generalized to include all younger women at increased fracture risk (namely, younger women whose fracture risk is equal to or greater than that of a 65-year-old white woman who has no additional risk factors).
- In 2011, the Task Force did not update its "C" recommendation for screening younger women who are not at increased risk for fractures. The Task Force additionally addressed screening for osteoporosis in men, a population that had not previously been issued a recommendation.
- Overall, the "B" recommendation in favor of screening women aged 65 and older and a set of younger women at increased fracture risk did not change. As such, a letter score of "**positive to equally as positive**" is appropriate.

Intensity Score

- Notably, the Task Force expanded its "B" recommendation for screening women younger than 65 to include all women with a 10-year fracture risk equal to or greater than that of a 65-year-old white women without additional risk forces. The previous "B" recommendation for younger women was limited to women 60 to 64 years of age at increased fracture risk. Thus, an intensity score of "**increased intensity**" is appropriate.

Example 22

Previous Recommendations

2004: Screening for visual impairment in children younger than age 5 years[113]	
Screening to detect amblyopia, strabismus, and defects in visual acuity in children younger than age 5 years	**B**

Updated Recommendations

2011: Vision screening for children ages 1-5[114]	
Vision screening for children <3 years of age	**I**
Vision screening for all children at least once between the ages of 3 and 5 years, to detect the presence of amblyopia or its risk factors	**B**

Letter Score

- In 2011, the Task Force provided more guidance on the appropriate screening age for vision screening in children by issuing two separate recommendations based on age group. The overall "B" recommendation for screening children younger than age 5 years, however, did not change. As such, a letter score of "**positive to equally as positive**" is appropriate.

Intensity Score

- In 2004, the Task Force did not provide guidance on the optimal age to begin vision screening. The Task commented that it was "unable to determine the optimal screening tests, periodicity of screening, or technical proficiency required of the screening clinician." Conversely, in 2011, the Task Force issued separate recommendations for vision screening in children between the ages of 3 and 5 years of age ("B" recommendation for screening at least once) and in children less than 3 years ("I" statement). Since the 2004 recommendation did not provide clear guidance on the optimal age for screening, however, a clear change in the population issued a positive recommendation for screening cannot be inferred. Thus, an intensity score of "**same intensity**" is appropriate.

Example 23

Previous Recommendations

1996: Screening for visual impairment[31]	
Vision screening for amblyopia and strabismus in preschool children once before entering school, preferably between ages 3 and 4 years	**B**

Updated Recommendations

2004: Screening for visual impairment in children younger than age 5 years[113]	
Screening to detect amblyopia, strabismus, and defects in visual acuity in children younger than age 5 years	**B**

Letter Score

- The "B" recommendation for screening preschool children for visual impairment did not change. As such, a letter score of "**positive to equally as positive**" is appropriate.

Intensity Score

- In 1996, the Task Force recommended vision screening for stabismus and amblyopia in children once before entering school. The Task Force noted that this screening should preferably occur between the ages 3 and 4 years since "detecting occult visual disorders by screening tests in children under 3 years of age has generally been unsuccessful." As discussed above (Example 22), the 2004 recommendation statement did not provide clear guidance on the periodicity or optimal age for vision screening in children. For this reason, no clear changes in the intensity of the recommended screening intervention can be inferred. Thus, an intensity score of "**same intensity**" is appropriate.

Example 24

Previous Recommendations | Updated Recommendations

1996: Screening for asymptomatic bacteriuria[31]	
Screening for asymptomatic bacteriuria with urine culture in pregnant women at 12 to 16 weeks of gestation	**A**
Routine screening for asymptomatic bacteriuria with leukocyte esterase or nitrite testing in pregnant women	**D**
Insufficient evidence to recommend for or against routine screening for asymptomatic bacteriuria with leukocyte esterase or nitrite testing in non-institutionalized elderly women	**C**
Insufficient evidence to recommend for or against routine screening for asymptomatic bacteriuria with leukocyte esterase or nitrite testing in women with diabetes	**C**
Routine screening for bacteriuria with leukocyte esterase or nitrite testing in school-aged girls	**E**
Routine screening for bacteriuria with leukocyte esterase or nitrite testing in institutionalized elderly persons	**E**
Routine screening for bacteriuria with leukocyte esterase or nitrite testing in other asymptomatic children, adolescents, and adults	**D**
Screening for asymptomatic bacteriuria with routine urine microscopy	**D**

2004: Screening for asymptomatic bacteriuria in adults[115]	
Screening for asymptomatic bacteriuria with urine culture in pregnant women at 12 to 16 weeks gestation.	**A**
Screening for asymptomatic bacteriuria in men and nonpregnant women.	**D**

Letter Score

- The updated 2004 recommendation statement focuses on adults; whereas, the Task Force additionally issued recommendations for children in 1996. This change represents a splitting of the topic. Notably, the Task Force has not updated its recommendations for screening for asymptomatic bacteriuria in children, and the topic does not appear to be active.
- The "A" recommendation for screening pregnant women for asymptomatic bacteriuria with urine culture at 12 to 16 weeks gestation did not change.
- Notably, the Task Force did not update the 1996 "D" recommendation for routine screening in pregnant women with leukocyte esterase or nitrite testing. The 2004 recommendation statement, however, does note that "dipstick analysis and direct microscopy have poor positive predictive value and negative predictive in detecting bacteriuria in asymptomatic persons" and specifically recommends screening using urine culture in pregnant women.
- In 2004, the Task Force issued a single "D" recommendation against screening in asymptomatic men and non-pregnant women. Previously, several individual recommendations had been issued for routine screening in subpopulations of asymptomatic persons. Notably, this recommendation applies to asymptomatic non-institutionalized elderly women and women with diabetes, subpopulations for which the Task Force had previously found insufficient evidence to recommend for or against routine screening. The change in letter grade for these subpopulations represents the only clear difference in comparable recommendations between the two sets of recommendations for screening asymptomatic bacteriuria.

- **Recall Rule 5:** If previously issued and updated recommendation statements issue both positive and negative recommendations for an intervention in different subpopulations, prioritize the positive recommendations in the assignment of a letter score.
- **Application of Rule 5:** Both recommendation statements issued "A" recommendations in favor of screening in pregnant women and "D" recommendations against screening in subpopulations of asymptomatic persons. Application of Rule 5 results in the selection of a variant of the "positive to positive" letter score. Given the change from insufficient evidence recommendations for screening in non-institutionalized elderly women and women with diabetes to the inclusion of these subpopulations in the updated "D" recommendation against screening, a letter score of "**positive to less strongly positive**" is appropriate.

Intensity Score

- **Rule 3:** Only consider changes in the intensity of interventions and populations receiving positive recommendations when assigning an intensity score.
- **Application of Rule 3:** The "A" recommendation in favor of screening pregnant women at 12 to 16 weeks gestation with urine culture did not change. Thus, application of Rule 3 leads to the selection of "**same intensity**" as the intensity score.

Example 25

Previous Recommendations

2008: Screening for lipid disorders in adults[17]	
Screening men aged 35 and older for lipid disorders	**A**
Screening men aged 20-35 for lipid disorders if they are at increased risk for coronary heart disease	**B**
Screening women aged 45 and older for lipid disorders if they are at increased risk for coronary heart disease	**A**
Screening women aged 20-45 for lipid disorders if they are at increased risk for coronary heart disease	**B**
Screening for lipid disorders in men aged 20 to 35, or in women aged 20 and older who are not at increased risk for coronary heart disease	**C**

Updated Recommendations

2016: Statin use for the primary prevention of cardiovascular disease in adults[16]	
Initiating use of low- to moderate-dose statins in adults aged 40 to 75 years without a history of CVD who have one or more CVD risk factors and a calculated 10-year CVD event risk of 10% or greater	**B**
Initiating use of low- to moderate-dose statins to adults aged 40 to 75 years without a history of CVD who have one or more CVD risk factors and a calculated 10-year CVD event risk of 7.5% to 10%	**C**
Initiating statin use in adults 76 years and older	**I**

Letter Score

- The updated 2016 recommendations pertain to the use of statins; whereas, the previously issued recommendations pertain to screening for lipid disorders. In making this change, the Task Force noted that "in the age range in which statins have been studied for primary prevention, universal screening for elevated lipid levels is required [to help identify persons who may benefit from statin therapy]."
- Since both recommendation statements either directly recommend (2008) or imply a recommendation (2016) in favor of lipid screening in a subset of adults, a variant of the "positive to positive" letter score is appropriate. Because the 2016 recommendation statement does not provide specific recommendations (and associated letter grades) for which adults should be screened, however, the neutral letter score of "**positive to equally as positive**" is most suitable.

Intensity Score

- Beyond the implied recommendation of universal screening in a subset of adults, the 2016 recommendation statement further recommends statin use in a subset of adults. In contrast, the 2008 recommendation statement only issued recommendations for screening and did not provide specific recommendations for the treatment of lipid disorders (beyond noting that the benefits of screening and treating lipid disorders outweigh the potential harms for specified subpopulations of adults). As such, an intensity score of "**increased intensity**" is appropriate.

Example 26

Previous Recommendations

2001: Screening adults for lipid disorders[116]	
Screening men aged 35 years and older and women aged 45 years and older for lipid disorders and treating abnormal lipids in people who are at increased risk of coronary heart disease	**A**
Screening younger adults (men aged 20 to 35 years and women aged 20 to 45 years) for lipid disorders if they have other risk factors for coronary heart disease	**B**
Screening for lipid disorders in younger adults (men aged 20 to 35 years or women aged 20 to 45 years) in the absence of known risk factors for coronary heart disease	**C**
Total cholesterol and high-density lipoprotein cholesterol measurement as a part of routine screening for lipid disorders	**B**
Triglyceride measurement as a part of routine screening for lipid disorders.	**I**

Updated Recommendations

2008: Screening for lipid disorders in adults[17]	
Screening men aged 35 and older for lipid disorders	**A**
Screening men aged 20-35 for lipid disorders if they are at increased risk for coronary heart disease	**B**
Screening women aged 45 and older for lipid disorders if they are at increased risk for coronary heart disease	**A**
Screening women aged 20-45 for lipid disorders if they are at increased risk for coronary heart disease	**B**
Screening for lipid disorders in men aged 20 to 35, or in women aged 20 and older who are not at increased risk for coronary heart disease	**C**

Letter Score

- The "A" recommendations for screening men age 35 and older for lipid disorders did not change.
- The "C" recommendations for screening younger adults (men aged 20 to 35 years and women aged 20 to 45) who are not at increased risk of CHD did not change.
- The "B" recommendations for screening men age 20 to 35 and women age 20 to 45 at increased risk for CHD did not change.
- In 2008, the Task Force issued a "C" recommendation for screening women aged 20 and older who are not at increased risk of coronary heart disease (CHD). Conversely, in 2001, the Task Force recommended screening for all women aged 45 and older regardless of CHD risk. This difference implies a change from an "A" recommendation to a "C" recommendation for screening in women aged 45 and older who are not at increased CHD risk.
- In 2008, the Task Force chose not to update its specific recommendations for the lab measurements to include as part of routine screening for lipid disorders. Instead, the Task Force discussed preferred screening tests in the "clinical considerations" section of the recommendation statement.

- Finally, in 2008, the Task Force removed language pertaining to the treatment of abnormal lipids from its recommendation summaries. Instead, discussion of treatment was included in other sections of the recommendation statement.
- The change from an "A" recommendation to a "C" recommendation for screening women aged 45 and older who are not at increased CHD risk represents the only clear difference in comparable recommendations. As such, a letter score of "**positive to less strongly positive**" is appropriate.

Intensity Score

- The Task Force did not issue clear guidance or the optimal interval for screening or the appropriate age to stop screening in either recommendation statement. Furthermore, guidance for preferred screening tests did not change.
- The change from an "A" recommendation to a "C" recommendation for screening women aged 45 and older who are not at increased CHD risk represents a decrease in the breadth of the population covered by a positive recommendation for screening. Thus, an intensity score of "**decreased intensity**" is appropriate.

APPENDIX B: Supplementary results

Active USPSTF recommendations

Table B1. Number of active recommendation statements and individual recommendations (as of June 1, 2017)

Current number of active topics	84
Current number of active recommendations	132
Mean number of recommendations per topic	1.6

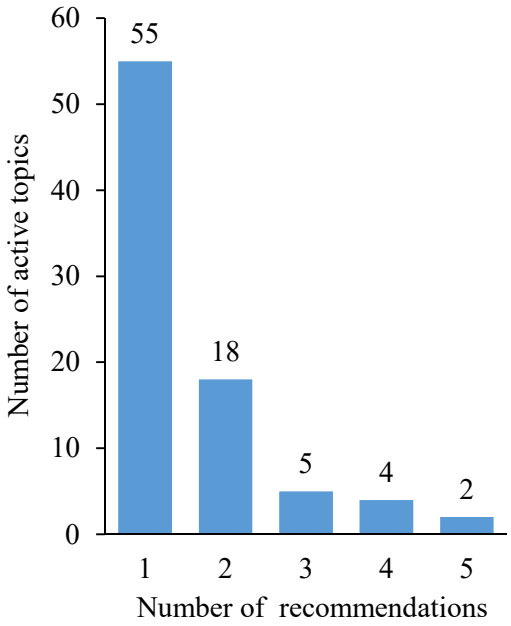


Figure B1. Number of active topics with specific numbers of individual recommendations (as of June 1, 2017); n = 84

Table B2. Number of active topics and individual recommendations published within the past five years (June 1, 2012 to June 1, 2017)

Current number of active topics updated within the past five years	63
Current number of active recommendations issued within the past five years	98

Table B3. Number and proportion of active recommendation statements with recommendations of particular grades and published within the past five years (June 1, 2012 to June 1, 2017); total number of topics = 63

Recommendation statement includes:	Number of topics	Proportion of topics
At least one "A" recommendation	6	9.5%
At least one "B" recommendation	25	39.7%
At least one "A" or "B" recommendation	31	49.2%
At least one "C" recommendation	6	9.5%
At least one "D" recommendation	12	19.0%
At least one "I" statement	36	57.1%

Table B4. Number and proportion of currently active recommendation statements and individual recommendations by publication year (as of June 1, 2017)

Year published	**Number of recommendation statements**	**Number of individual recommendations**
2004	3	4
2005	0	0
2006	2	4
2007	0	0
2008	3	5
2009	3	3
2010	1	1
2011	5	7
2012	11	19
2013	14	22
2014	14	24
2015	7	11
2016	15	26
2017	6	6
Total	84	132

Allocation of USPSTF recommendation grades over time

Table B5. Number and proportion of individual recommendations issued by year and letter grade from 2001 to 2017 (through June 1, 2017).

Year	Recommendation grade					Total
	A	B	C	D	I	
2017	1 (16.7%)	1 (16.7%)	0 (0.0%)	1 (16.7%)	3 (50.0%)	6
2016	2 (7.7%)	7 (26.9%)	4 (15.4%)	2 (7.7%)	11 (42.3%)	26
2015	3 (27.3%)	1 (9.1%)	0 (0.0%)	0 (0.0%)	7 (63.6%)	11
2014	0 (0.0%)	10 (41.7%)	1 (4.2%)	3 (12.5%)	10 (41.7%)	24
2013	2 (9.1%)	7 (31.8%)	0 (0.0%)	3 (13.6%)	10 (45.5%)	22
2012	1 (5.3%)	3 (15.8%)	2 (10.5%)	9 (47.4%)	4 (21.1%)	19
2011	1 (14.3%)	2 (28.6%)	0 (0.0%)	1 (14.3%)	3 (42.9%)	7
2010	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1
2009	7 (30.4%)	3 (13.0%)	2 (8.7%)	2 (8.7%)	9 (39.1%)	23
2008	6 (23.1%)	6 (23.1%)	2 (7.7%)	5 (19.2%)	7 (26.9%)	26
2007	3 (27.3%)	1 (9.1%)	1 (9.1%)	2 (18.2%)	4 (36.4%)	11
2006	0 (0.0%)	2 (18.2%)	0 (0.0%)	3 (27.3%)	6 (54.5%)	11
2005	3 (15.8%)	3 (15.8%)	2 (10.5%)	8 (42.1%)	3 (15.8%)	19
2004	5 (17.2%)	4 (13.8%)	0 (0.0%)	10 (34.5%)	10 (34.5%)	29
2003	4 (16.7%)	4 (16.7%)	0 (0.0%)	3 (12.5%)	13 (54.2%)	24
2002	2 (13.3%)	4 (26.7%)	1 (6.7%)	2 (13.3%)	6 (40.0%)	15
2001	2 (14.3%)	3 (21.4%)	3 (21.4%)	1 (7.1%)	5 (35.7%)	14
Total	42 (14.6%)	62 (21.5%)	18 (6.3%)	55 (19.1%)	111 (38.5%)	288

Table B6. Number and proportion of individual recommendations issued from 2001 to 2017 by year and time period (through June 1, 2017). *Data for these time periods presented in the main text.

Time period	Recommendation grade						Total
	A	B	A or B	C	D	I	
2013-2017*	8 (9.0%)	26 (29.2%)	34 (38.2%)	5 (5.6%)	9 (10.1%)	41 (46.1%)	89
2012-2017	9 (8.3%)	29 (26.9%)	38 (35.2%)	7 (6.5%)	18 (16.7%)	45 (41.7%)	108
2008-2013	17 (17.3%)	22 (22.4%)	39 (39.8%)	6 (6.1%)	20 (20.4%)	33 (33.7%)	98
2008-2012	15 (19.7%)	15 (19.7%)	30 (39.5%)	6 (7.9%)	17 (22.4%)	23 (30.3%)	76
2007-2013	20 (18.3%)	23 (21.1%)	43 (39.4%)	7 (6.4%)	22 (20.2%)	37 (33.9%)	109
2007-2012	18 (20.7%)	16 (18.4%)	34 (39.1%)	7 (8.0%)	19 (21.8%)	27 (31.0%)	87
2006-2013	20 (16.7%)	25 (20.8%)	45 (37.5%)	7 (5.8%)	25 (20.8%)	43 (35.8%)	120
2006-2012*	18 (18.4%)	18 (18.4%)	36 (36.7%)	7 (7.1%)	22 (22.4%)	33 (33.7%)	98
2001-2007	19 (15.4%)	21 (17.1%)	40 (32.5%)	7 (5.7%)	29 (23.6%)	47 (38.2%)	123
2001-2006	16 (14.3%)	20 (17.9%)	36 (32.1%)	6 (5.4%)	27 (24.1%)	43 (38.4%)	112
2001-2005*	16 (15.8%)	18 (17.8%)	34 (33.7%)	6 (5.9%)	24 (23.8%)	37 (36.6%)	101

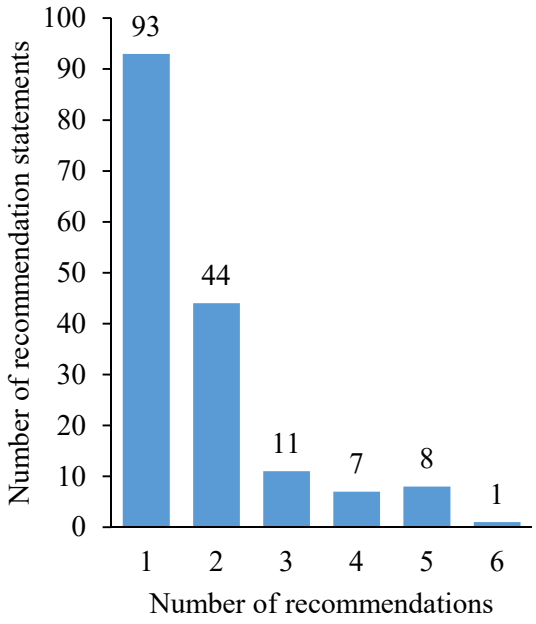


Figure B2. Number of recommendation statements with specific numbers of individual recommendations issued from 2001 to 2017 (as of June 1, 2017); n = 164

Table B7. Number and proportion of recommendation statements containing at least one individual recommendation of particular grades stratified by time period. Data tabulated for all recommendation statements issued from 2001 to 2017 (as of June 1, 2017). *Data for these time periods presented in the main text.

Time period	Contains at least one recommendation of the following grades:						Total
	A	B	A or B	C	D	I	
2013-2017*	6 (10.7%)	24 (42.9%)	30 (53.6%)	5 (8.9%)	9 (16.1%)	33 (58.9%)	56
2012-2017	7 (10.4%)	27 (40.3%)	34 (50.7%)	7 (10.4%)	14 (20.9%)	37 (55.2%)	67
2008-2013	13 (22.8%)	21 (36.8%)	33 (57.9%)	6 (10.5%)	16 (28.1%)	29 (50.9%)	57
2008-2012	12 (27.9%)	14 (32.6%)	25 (58.1%)	6 (14.0%)	13 (30.2%)	21 (48.8%)	43
2007-2013	16 (25.0%)	22 (34.4%)	36 (56.3%)	7 (10.9%)	18 (28.1%)	32 (50.0%)	64
2007-2012	15 (30.0%)	15 (30.0%)	28 (56.0%)	7 (14.0%)	15 (30.0%)	24 (48.0%)	50
2006-2013	16 (23.2%)	23 (33.3%)	37 (53.6%)	7 (10.1%)	20 (29.0%)	36 (52.2%)	69
2006-2012*	15 (27.3%)	16 (29.1%)	29 (52.7%)	7 (12.7%)	17 (30.9%)	28 (50.9%)	55
2001-2007	16 (24.6%)	19 (29.2%)	30 (46.2%)	6 (9.2%)	25 (38.5%)	40 (61.5%)	65
2001-2006	13 (22.4%)	18 (31.0%)	27 (46.6%)	5 (8.6%)	23 (39.7%)	37 (63.8%)	58
2001-2005*	13 (24.5%)	17 (32.1%)	26 (49.1%)	5 (9.4%)	21 (39.6%)	33 (62.3%)	53
Total	34 (20.7%)	57 (34.8%)	85 (51.8%)	17 (10.4%)	47 (28.7%)	94 (57.3%)	164

Table B8. Number of individual recommendations issued by grade stratified by the certainty and magnitude of net benefit. The corresponding letter grade is italicized. Data is included for all recommendations published from May 2007 to May 2017.*

Certainty of net benefit	Magnitude of net benefit			
	Substantial	Moderate	Small	Zero/Negative
High	24 *(A)*	1 *(B)*	0 (*C)*	2 *(D)*
Moderate	4 *(B)*	31 *(B)*	10 *(C)*	24 *(D)*
Low	68 *(I)*			

*Several recommendations were not included in the counts above because they did not clearly specify either the certainty and/or magnitude of net benefit (n = 11). For some of these recommendations (n = 5), the Task Force found "at least moderate" certainty and/or "at least moderate" magnitude of net benefit, but did not specify the precise level.[9,11,16,90] Additionally, in 2012 the Task Force concluded with high certainty that exercise or physical therapy has moderate net benefit and with moderate certainty that vitamin D supplementation has moderate net benefit in the prevention of falls in older adults, but issued a single "B" recommendation for these interventions.[62] Finally, the Task Force did not clearly specify the certainty or magnitude of net benefit associated with its 2008 recommendations for screening for lipid disorders in adults (n = 5).[17]

Point-based assessment of the directionality of topic updates over time

Table B9. Number and proportion of topic updates by directionality assessed using two different point-based methods from 2001 to 2017 (through June 1, 2017). Results tabulated by time periods; n = 142. *Data for these time periods presented in the main text.

Time period	Directionality score 1			Directionality score 2			Total
	Positive	Neutral	Negative	Positive	Neutral	Negative	
2013-2017*	20 (40.8%)	23 (46.9%)	6 (12.2%)	14 (28.6%)	31 (63.3%)	4 (8.2%)	49
2012-2017	22 (37.3%)	28 (47.5%)	9 (15.3%)	15 (25.4%)	37 (62.7%)	7 (11.9%)	59
2008-2013	15 (29.4%)	26 (51.0%)	10 (19.6%)	11 (21.6%)	32 (62.7%)	8 (15.7%)	51
2008-2012	9 (23.7%)	19 (50.0%)	10 (26.3%)	6 (15.8%)	24 (63.2%)	8 (21.1%)	38
2007-2013	16 (28.1%)	29 (50.9%)	12 (21.1%)	11 (19.3%)	36 (63.2%)	10 (17.5%)	57
2007-2012	10 (22.7%)	22 (50.0%)	12 (27.3%)	6 (13.6%)	28 (63.6%)	10 (22.7%)	44
2006-2013	17 (28.8%)	29 (49.2%)	13 (22.0%)	11 (18.6%)	36 (61.0%)	12 (20.3%)	59
2006-2012*	11 (23.9%)	22 (47.8%)	13 (28.3%)	6 (13.0%)	28 (60.9%)	12 (26.1%)	46
2001-2007	16 (29.1%)	21 (38.2%)	18 (32.7%)	11 (20.0%)	26 (47.3%)	18 (32.7%)	55
2001-2006	15 (30.6%)	18 (36.7%)	16 (32.7%)	11 (22.4%)	22 (44.9%)	16 (32.7%)	49
2001-2005*	14 (29.8%)	18 (38.3%)	15 (31.9%)	11 (23.4%)	22 (46.8%)	14 (29.8%)	47
Total	45 (31.7%)	63 (44.4%)	34 (23.9%)	31 (21.8%)	81 (57.0%)	30 (21.1%)	142

Classification-based assessment of the directionality of topic updates over time

Table B10. Number and proportion of topic updates by letter score directionality issued from 2001 to 2017 (through June 1, 2017). Results tabulated for different time periods; n = 142. *Data for these time periods presented in the main text.

Time period	Letter score directionality			Total
	Positive	Neutral	Negative	
2013-2017*	10 (20.4%)	34 (69.4%)	5 (10.2%)	49
2012-2017	11 (18.6%)	41 (69.5%)	7 (11.9%)	59
2008-2013	12 (23.5%)	31 (60.8%)	8 (15.7%)	51
2008-2012	6 (15.8%)	24 (63.2%)	8 (21.1%)	38
2007-2013	12 (21.1%)	35 (61.4%)	10 (17.5%)	57
2007-2012	6 (13.6%)	28 (63.6%)	10 (22.7%)	44
2006-2013	12 (20.3%)	35 (59.3%)	12 (20.3%)	59
2006-2012*	6 (13.0%)	28 (60.9%)	12 (26.1%)	46
2001-2007	11 (20.0%)	27 (49.1%)	17 (30.9%)	55
2001-2006	11 (22.4%)	23 (46.9%)	15 (30.6%)	49
2001-2005*	11 (23.4%)	23 (48.9%)	13 (27.7%)	47
Total	27 (19.0%)	85 (59.9%)	30 (21.1%)	142

Table B11. Number and proportion of topic updates by intensity score issued from 2001 to 2017 (through June 1, 2017). Results tabulated for different time periods; n =65. *Data for these time periods presented in the main text.

Time period	Intensity score			Total
	Increased	Same	Decreased	
2013-2017*	5 (21.7%)	17 (73.9%)	1 (4.3%)	23
2012-2017	5 (19.2%)	19 (73.1%)	2 (7.7%)	26
2008-2013	2 (8.3%)	17 (70.8%)	5 (20.8%)	24
2008-2012	1 (5.0%)	14 (70.0%)	5 (25.0%)	20
2007-2013	2 (7.4%)	19 (70.4%)	6 (22.2%)	27
2007-2012	1 (4.3%)	16 (69.6%)	6 (26.1%)	23
2006-2013	2 (7.1%)	20 (71.4%)	6 (21.4%)	28
2006-2012*	1 (4.2%)	17 (70.8%)	6 (25.0%)	24
2001-2007	2 (9.1%)	14 (63.6%)	6 (27.3%)	22
2001-2006	2 (10.5%)	12 (63.2%)	5 (26.3%)	19
2001-2005*	2 (11.1%)	11 (61.1%)	5 (27.8%)	18
Total	8 (12.3%)	45 (69.2%)	12 (18.5%)	65

Categorization of updated recommendation statements based on their relationships to previously published recommendation statements

Table B12. Number and proportion of recommendation statements classified based on how the covered topic relates to previously issued recommendation statements

Category	Number (proportion)
Linear topic update	99 (60.4%)
Splitting of topics	39 (23.8%)
Merging of topics	2 (1.2%)
Mixing of topics	2 (1.2%)
New topic	22 (13.4%)
Total number of topic updates	164

Dropped and new "D" recommendations against the use of preventive services

Table B13. Dropped "D" recommendations

Topic	Year	Recommendation dropped
Screening for breast cancer	2016	In 2009, the USPSTF issued a "D" recommendation against teaching women how to perform breast self-examinations. The updated recommendation statement did not include a recommendation for this intervention.
Screening for colorectal cancer	2016	In 2008, the USPSTF issued a "D" recommendation against screening for colorectal cancer in adults older than age 85 years. The updated recommendation statement did not a include a specific recommendation for this age group; however, a clause in the recommendation statement reads "the USPSTF does not recommend routine screening for colorectal cancer in adults 86 years and older."
Screening for syphilis infection in non-pregnant adults and adolescents	2016	In 2004, the USPSTF issued a "D" recommendation against the routine screening of asymptomatic persons who are not at increased risk for syphilis infection. The updated recommendation statement did not include a recommendation for this population.
Screening for chlamydia and gonorrhea	2014	In 2005, a "D" recommendation was issued against routine screening for gonorrhea infection in men and women who are at low risk for infection. The updated recommendation statement did not include a recommendation for screening for gonorrhea in low risk women.

Table B13. *Continued.*

Screening for hepatitis B virus infection in nonpregnant adolescents and adults	2014	In 2004, a "D" recommendation was issued against routine screening for hepatitis B virus infection in the general asymptomatic population. The updated recommendation statement did not include a recommendation for this population. Instead, a "B" recommendation was issued for persons at high risk of infection.
Screening for hepatitis C virus infection in adults	2013	In 2004, a "D' recommendation was issued against routine screening for hepatitis C virus infection in asymptomatic adults who are not at increased risk for infection. The updated recommendation statement did not include a recommendation for screening in this population. Instead, a "B" recommendation was issued for persons at high risk for infection.
Screening for coronary heart disease	2004	In 1996, a "D recommendation was issued for routine ECG screening as part of the periodic health visit or pre-participation sports physical for asymptomatic children, adolescents, and young adults. The updated recommendation statement did not include a recommendation for screening in children or adolescents (only a recommendation against screening low-risk adults was issued).
Screening for asymptomatic bacteriuria in adults	2004	In 1996, a "D" recommendation was issued for routine screening for asymptomatic bacteriuria in pregnant women with leukocyte esterase or nitrite testing. The updated recommendation statement did not include a specific recommendation for this screening modality. Instead, the Task Force only updated the recommendation for screening pregnant women with urine culture.

Table B14. New "D" recommendations for interventions or populations that had not previously been evaluated

Topic	Year	New recommendation
New "D" recommendations issued for updated topics		
Aspirin for the prevention of cardiovascular disease	2009	New "D" recommendation against the use of aspirin for stroke prevention in women younger than 55 years and for myocardial infarction prevention in men younger than 45 years. In 2002, only adults at increased risk of coronary heart disease were issued a recommendation.
Screening for elevated blood lead levels in children and pregnant women	2006	New "D" recommendation against routine screening for elevated blood lead levels in asymptomatic children aged 1 to 5 years who are at average risk. In 1996, only high-risk children were issued a screening recommendation.
Screening for syphilis infection	2004	New "D" recommendation against the routine screening of asymptomatic persons who are not at increased risk for syphilis infection. In 1996, recommendations were only given for high-risk persons and pregnant women.
Screening for coronary heart disease	2004	New "D" recommendation against routine screening with electron-beam computerized tomography scanning for coronary calcium for either the presence of severe coronary artery stenosis or the prediction of coronary heart disease (CHD) events in adults at low risk for CHD events. In 1996, recommendations were only issued for resting ECG, ambulatory ECG, and exercise ECG.
Screening for cervical cancer	2003	New "D" recommendation against routine Pap smear screening in women who have had a total hysterectomy for benign disease. In 1996, no recommendation was issued for this population.
"D" recommendations issued for new topics		
Vitamin D and calcium supplementation to prevent fractures in adults	2013	New "D" recommendation against daily supplementation with 400 IU or less of vitamin D3 and 1000 mg or less of calcium for the primary prevention of fractures in noninstitutionalized postmenopausal women.
Screening for chronic obstructive pulmonary disease	2008	New "D" recommendation against screening for chronic obstructive pulmonary disease in asymptomatic adults.
Routine aspirin or nonsteroidal anti-inflammatory drugs for the primary prevention of colorectal cancer	2007	New "D" recommendation against the routine use of aspirin and nonsteroidal anti-inflammatory drugs to prevent colorectal cancer in individuals at average risk for colorectal cancer.

Table B14. *Continued.*

Screening for hemochromatosis	2006	New "D" recommendation against routine genetic screening for hereditary hemochromatosis in the asymptomatic general population.
Genetic risk assessment and BRCA mutation testing for breast and ovarian cancer susceptibility	2005	New "D" recommendation against routine referral for genetic counseling or routine breast cancer susceptibility gene (BRCA) testing for women whose family history is not associated with an increased risk for BRCA1 or BRCA2 mutations.
Screening for hepatitis C virus infection in adults	2004	New "D" recommendation against routine screening for hepatitis C virus infection in asymptomatic adults who are not at increased risk (general population) for infection
Routine vitamin supplementation to prevent cancer and cardiovascular disease	2003	New "D" recommendation against the use of beta-carotene supplements, either alone or in combination, for the prevention of cancer or cardiovascular disease
Chemoprevention of breast cancer	2002	New "D" recommendation against the routine use of tamoxifen or raloxifene for the primary prevention of breast cancer in women at low or average risk for breast cancer
Screening for bacterial vaginosis in pregnancy	2001	New "D" recommendation against routinely screening average-risk asymptomatic pregnant women for bacterial vaginosis.

New topics with recommendations in progress, referred topics, inactive topics, and other past topics that are no longer updated

Table B15. Previously reviewed topics and new topics with recommendations in progress (as of June 1, 2017)

Inactive topics

- Screening of infants for hyperbilirubinemia (last updated in 2009[117])
- Screening for hearing loss in newborns (last updated in 2008[118])
- Screening for hemochromatosis (last updated in 2006[119])
- Counseling to prevent dental and periodontal disease (last updated in 1996[31])
- Counseling to prevent gynecological cancers (last updated in 1996[31])
- Screening for rubella (last updated in 1996[31])

Referred topics

- Screening for congenital hyperthyroidism (last updated in 2008[120]; referred to the Discretionary Advisory Committee on Heritable Disorders in Newborns and Children [DACHDNC])
- Screening for phenylketonuria in newborns (last updated in 2008[121]; referred to DACHDNC)
- Screening for sickle cell disease in newborns (last updated in 2007[122]; referred to DACHDNC)
- Counseling about the proper use of motor vehicle occupant restraints and avoidance of alcohol use while driving (last updated in 2007[60]; referred to the Community Preventive Services Task Force [CPSTF])
- Prevention of youth violence (last updated in 1996[31]; referred to the CPSTF)
- Immunizations for adults (last updated in 1996[31]; referred to the Advisory Committee on Immunization Practices [ACIP])
- Immunization for children (last updated in 1996[31]; referred to ACIP)

New topics with recommendations in progress (as of June 1, 2017)[123]

- Interventions to prevent perinatal depression
- Behavioral and pharmacotherapy interventions for weight loss to prevent obesity-related morbidity and mortality in adults
- Pre-exposure prophylaxis for the prevention of HIV

Table B15. *Continued.*

Topics reviewed in the 2nd edition of the *Guide to Clinical Preventive Services*[31], but not currently listed on the USPSTF website (as of June 1, 2017)

- Screening with immune markers to identify asymptomatic individuals at risk for developing insulin-dependent diabetes mellitus (included in a broader chapter on screening for diabetes)
- Screening for iron deficiency anemia in the general population (included in a broader chapter on screening for iron deficiency anemia including iron prophylaxis; current topics focus on young children and pregnant women)
- Counseling families to control lead dust exposure and optimize diet to reduce lead absorption (included in a broader chapter screening for elevated lead levels in childhood and pregnancy)
- Routine use of acyclovir in pregnant women with recurrent herpes; Counseling of women who have no history of genital herpes, but whose partners have a positive history, to use condoms or abstain from intercourse during pregnancy (both included in a broader chapter on screening and counseling for genital herpes simplex)
- Screening for visual impairment in older children, adolescents, and adults (included in a broader chapter on screening for visual impairment; current topics focus on young children and older adults)
- Screening for hearing loss in children, adolescents, and working-age adults (included in a broader chapter on screening for hearing impairment; current topics focus on newborns and older adults)
- Screening ultrasonography in pregnancy
- Use of intrapartum electronic fetal monitoring in pregnancy
- Use of home uterine activity monitoring in pregnancy
- Screening for down syndrome
- Screening for neural tube defects (included in a broader chapter which issued recommendations for folic acid prophylaxis; current topic only includes recommendations for folic acid supplementation)
- Screening for hemoglobinopathies (a subsequently issued recommendation statement focused specifically on screening for sickle cell disease in newborns; this topic has since been referred to the DACHDNC)
- Training primary care clinicians to recognize and treat affective disorders in order to prevent suicide (included in broader chapter on screening for suicide risk)
- Counseling patients to use motorcycle helmets; Counseling patients on safe pedestrian behaviors (both included in broader chapter on the prevention of motor vehicle injuries)
- Counseling adolescents, adults, and parents of young children on measures to reduce injury risk (included in a broader chapter on counseling to prevent household and recreational injuries; this chapter also included recommendations for several specific injury prevention interventions on the basis of the evidence for their efficacy of risk reduction)
- Counseling to prevent low back pain
- Counseling to prevent unintended pregnancy
- Post-exposure prophylaxis for selected infectious diseases

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